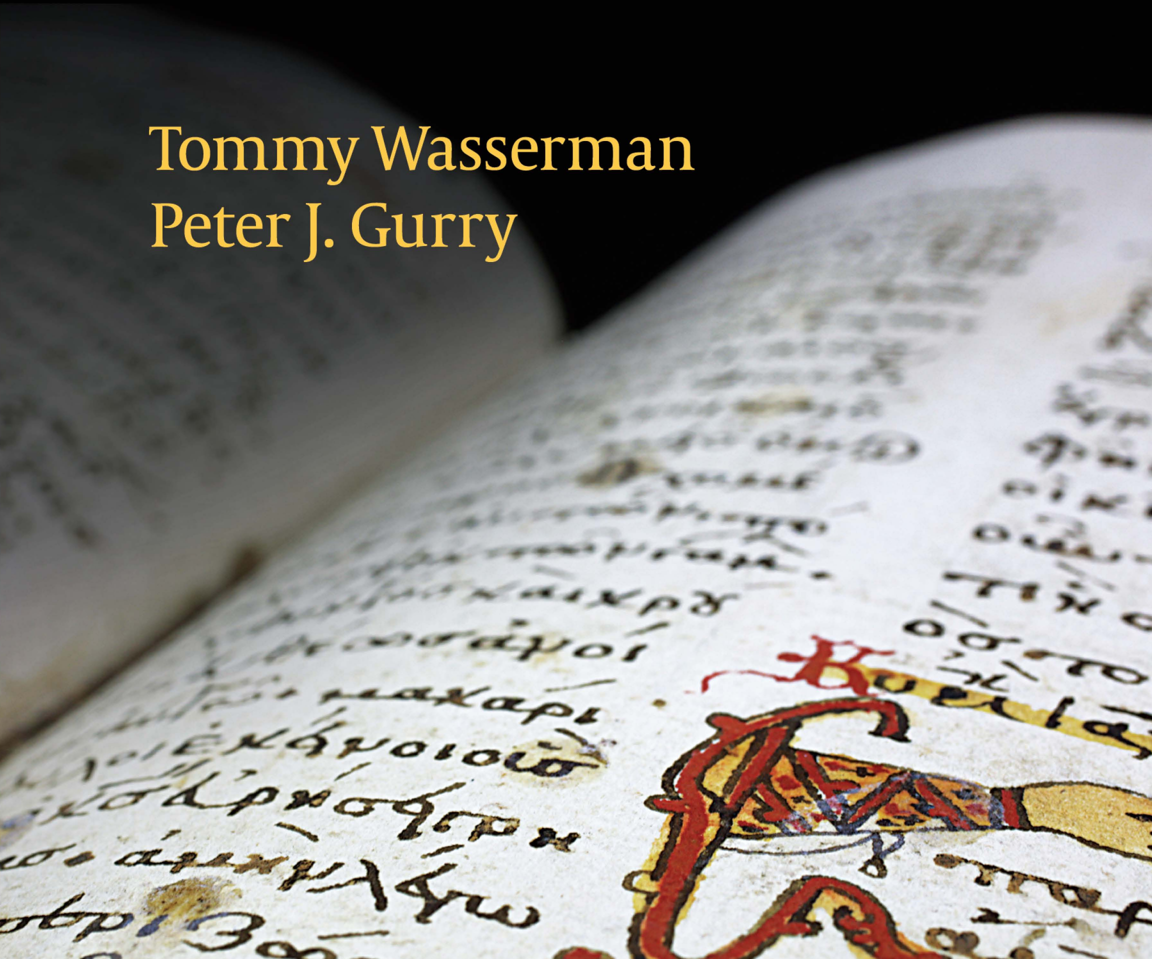
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An Introduction to the Coherence-Based Genealogical Method

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To
Gerd Mink

For his major contribution
to textual criticism

Contents

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Figures and Tables

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Abbreviations

AB	Anchor Bible
AnBib	Analecta Biblica
ANTF	Arbeiten zur neutestamentlichen Textforschung
BBB	Bonner Biblische Beiträge
BECNT	Baker Exegetical Commentary on the New Testament
BHGNT	Baylor Handbook on the Greek New Testament
BT	*Bible Translator*
CBGM	Coherence-Based Genealogical Method
CBQ	*Catholic Biblical Quarterly*
ConBNT	Coniectanea Biblica: New Testament Series
ECM	*Editio Critica Maior*
ECM IV/1.1	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior* IV*: Catholic Letters: Part 1: Text: Installment 1: James*. Stuttgart: Deutsche Bibelgesellschaft, 1997.
ECM IV/1.2	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 1: Text: Installment 2: The Letters of Peter*. Stuttgart: Deutsche Bibelgesellschaft, 2000.
ECM IV/1.3	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 1: Text: Installment 3: The First Letter of John*. Stuttgart: Deutsche Bibelgesellschaft, 2003.
ECM IV/1.4	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 1: Text: Installment 4: The Second and Third Letter of John, the Letter of Jude*. Stuttgart: Deutsche Bibelgesellschaft, 2005.

ECM IV/2.1	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 2: Supplementary Material: Installment 1: James*. Stuttgart: Deutsche Bibelgesellschaft, 1997.
ECM IV/2.2	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 2: Supplementary Material: Installment 2: The Letters of Peter*. Stuttgart: Deutsche Bibelgesellschaft, 2000.
ECM IV/2.3	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 2: Supplementary Material: Installment 3: The First Letter of John*. Stuttgart: Deutsche Bibelgesellschaft, 2003.
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ECM IV^2/1	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 1: Text*. 2nd ed. Stuttgart: Deutsche Bibelgesellschaft, 2013.
ECM IV^2/2	Barbara Aland et al., eds., *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters: Part 2: Supplementary Material*. 2nd ed. Stuttgart: Deutsche Bibelgesellschaft, 2013.
ECM III/1.1	Holger Strutwolf et al., eds., *Novum Testamentum Graecum: Editio Critica Maior III: The Acts of the Apostles: Part 1.1: Text, Chapters 1–14*. Stuttgart: Deutsche Bibelgesellschaft, 2017.
ECM III/1.2	Holger Strutwolf et al., eds., *Novum Testamentum Graecum: Editio Critica Maior III: The Acts of the Apostles: Part 1.2: Text, Chapters 15–28*. Stuttgart: Deutsche Bibelgesellschaft, 2017.
ECM III/2	Holger Strutwolf et al., eds., *Novum Testamentum Graecum: Editio Critica Maior III: The Acts of the Apostles: Part 2: Supplementary Material*. Stuttgart: Deutsche Bibelgesellschaft, 2017).
ECM III/3	Holger Strutwolf et al., eds., *Novum Testamentum Graecum: Editio Critica Maior III: The Acts of the Apostles:*

	Part 3: Studies. Stuttgart: Deutsche Bibelgesellschaft, 2017.
ECMPP	Holger Strutwolf and Klaus Wachtel, eds., *Novum Testamentum Graecum: Editio Critica Maior: Parallel Pericopes: Special Volume Regarding the Synoptic Gospels*. Stuttgart: Deutsche Bibelgesellschaft, 2011.
HTR	*Harvard Theological Review*
IGNTP	International Greek New Testament Project
INTF	Institut für Neutestamentliche Textforschung
JETS	*Journal of the Evangelical Theological Society*
JTS	*Journal of Theological Studies*
LQ	*Lutheran Quarterly*
NA^{27}	Aland, Barbara, et al., eds. *Novum Testamentum Graece*. 27th ed. Stuttgart: Deutsche Bibelgesellschaft, 1993.
NA^{28}	Aland, Barbara, et al., eds. *Novum Testamentum Graece*. 28th ed. Stuttgart: Deutsche Bibelgesellschaft, 2012.
NAC	New American Commentary
NICNT	New International Commentary on the New Testament
NovT	*Novum Testamentum*
NTS	*New Testament Studies*
NTTS	New Testament Tools and Studies
NTTSD	New Testament Tools, Studies and Documents
NT.VMR	New Testament Virtual Manuscript Room
RBS	Resources in Biblical Studies
RP	Robinson, Maurice A., and William G. Pierpont, eds. *The New Testament in the Original Greek: Byzantine Textform*. Southborough, MA: Chilton, 2005.
SBLGNT	Michael W. Holmes, ed. *The Greek New Testament:* SBL *Edition*. Atlanta: Society of Biblical Literature; Bellingham, WA: Logos Bible Software, 2010.
SD	Studies and Documents
TCS	Text-Critical Studies
TuT	Aland, Kurt, et al., eds. *Text und Textwert der griechischen Handschriften des Neuen Testaments*. ANTF. Berlin: de Gruyter, 1987–.
TC	*Textual Criticism: A Journal of Biblical Textual Criticism* (http://purl.org/TC)
THGNT	Jongkind, Dirk, and Peter J. Williams, eds. *The Greek*

	New Testament, Produced at Tyndale House, Cambridge. Wheaton, IL: Crossway, 2017.
UBS^4	Aland, Barbara, et al., eds., *The Greek New Testament*. 4th ed. Stuttgart: Deutsche Bibelgesellschaft; United Bible Societies, 1983.
UBS^5	Aland, Barbara, et al., eds., *The Greek New Testament*. 5th ed. Stuttgart: Deutsche Bibelgesellschaft; United Bible Societies, 2014.
v.l.	*varia lectio* = variant reading
WUNT	Wissenschaftliche Untersuchungen zum Neuen Testament

1
Introduction

This chapter sets the stage for the rest of the book. It explains why the CBGM is worth understanding and how this book will help you learn to use it.

Textual criticism is a discipline that tries to restore texts. The need for this arises whenever the original document of a written work has been lost and the existing copies no longer agree with each other. Textual criticism is needed for all twenty-seven books of the New Testament because, so far as we know, none of the autographs still exists; all were lost to the ravages of time and use. The trove of manuscripts, versions, and citations of the New Testament that we do have agrees significantly overall, yet the sheer number of times the New Testament was copied explain why there are so many differences between them.[1] Textual variation leaves the modern (and ancient) reader in a fix. Which text should be read? Which should be applied? Which should be preached? This is one of the questions that textual criticism tries to answer. For the New Testament, this means trying to determine, at each place where our copies disagree, what the author most likely wrote or, failing this, at least what the earliest text might have been. In this way, the work of textual criticism is fundamental to interpretation, since you cannot read a text you do not have. Because the interest of most readers of the New Testament is in what the authors wrote, this is what New Testament textual criticism has traditionally aimed to determine as

1. For the Greek evidence, see Peter J. Gurry, "The Number of Variants in the Greek New Testament: A Proposed Estimate," *NTS* 62 (2016): 97–121. See also David C. Parker, "Variants and Variance," in *Texts and Traditions: Essays in Honour of J. Keith Elliott*, ed. Peter Doble and Jeffery Kloha, NTTSD 47 (Leiden: Brill, 2014), 25–34 (esp. 34).

much as possible.[2] Where that is not possible, it aims to reach back as closely to the initial text as it can.

1.1. The Changing Landscape

For the New Testament, scholars have been working toward this goal for centuries, reaching back as far as Irenaeus in the second century and Origen and Jerome in the third and fourth centuries. In the modern period, the results of more systematic work take their most prominent form in critical editions of the Greek New Testament. Today, the two most popular are the Nestle-Aland *Novum Testamentum Graece* (NA) and the United Bible Societies' *Greek New Testament* (UBS). These are now in their twenty-eighth and fifth editions, respectively, and they are by far the most popular editions in print. The NA is typically preferred by scholars because the number of variants it provides is more extensive. The UBS is typically more popular with students and translators because it presents only those variants thought to most affect translation and sets out the evidence for the variants more comprehensively and in an apparatus that is easier to read. The UBS also provides a rating system that tells the reader how confident the editors were in their textual decisions.

Despite these and other differences between the two editions, they share the same reconstructed text and have done so since the 1970s.[3] That means that scholars, students, and pastors have had the same Greek text in their editions for over forty years. This is now changing. In the most recent editions the text of some books has finally been revised on the basis of the larger *Editio Critica Maior* (ECM), which we will introduce in more detail in the next chapter. So far, only the Catholic Letters and Acts have been newly edited in the ECM, but work on John, Mark, and Revelation is well underway. In the years to come, each of these books, along with the remaining books of the New Testament, will be completely revised and published in new volumes of the ECM, and these in turn will be used

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2. Other questions are also important, such as: What texts did past Christians read, study, and use for theology? Why did the text change when and where it did? In fact, it is hard to determine what the author's text was without giving some level of answer to this latter question.

3. The NA^{26} was published in 1979 and the UBS^3 in 1975. These were the first editions to share the same text. The differences between the two were mostly related to accentuation, punctuation, and arrangement of paragraphs.

to produce new editions of the NA and UBS. The nature of that revision brings us to the topic of this book: the Coherence-Based Genealogical Method, or CBGM. The current volumes of the ECM, and with them the UBS[5] and the NA[28] have been revised using the CBGM. This book is designed to introduce you to the CBGM.

1.2. The CBGM in Brief

So, what exactly is the CBGM? Answering that will require the remaining chapters of the book. But, in a relatively short sentence, the CBGM is a *method that* (1) *uses a set of computer tools* (2) *based in a new way of relating manuscript texts that is* (3) *designed to help us understand the origin and history of the New Testament text*. This definition highlights the fact that the CBGM is multifaceted. The two main aspects of the method are highlighted in the name itself, the first being that it is "coherence-based" and the second that it is a "genealogical method." While the name will not win branding awards anytime soon, it does capture the essence of the method.

Before explaining each aspect of our definition, we need to clarify exactly what the CBGM is relating. The CBGM makes a consistent distinction between manuscripts as physical artifacts and the text these artifacts contain. The CBGM is only intent on relating *texts*, not *manuscripts*. The term *witness* is often used in the context of the CBGM to refer to the *text* of a manuscript in distinction from the manuscript itself. A text of a manuscript may, of course, be much older than the parchment and ink that preserve it. We will explore this important distinction further in later sections of the book (see §2.2.1), but it is important to note it here.

To start with the first part of our definition, the CBGM uses a set of computer-based tools. These tools are all readily available online and are used to explore a new type of text-critical evidence.[4] That new evidence is described in the title of the method itself: "coherence." At its simplest, coherence simply means agreement between witnesses, but the CBGM uses it to a new degree and in a new way. It is based on far more data than has ever been previously used to study the text of the New Testament. In

4. These are the "Genealogical Queries" tools available for the Catholic Letters at http://intf.uni-muenster.de/cbgm/index_en.html and the "Manuscript Clusters" tools for the gospels at http://intf.uni-muenster.de/TT_PP/.

subsequent chapters we will explain the different types of coherence and how they are important. For now, it is enough to note that one way to conceive of the CBGM is as a set of tools for exploring this new evidence.

On the other hand, the CBGM is much more than just a set of online tools, important as those are. As the name implies, it is also a new method for relating manuscript texts to each other. What is new is not *that* the CBGM relates texts; what is new is *how* it relates them. The new principle the CBGM uses is that *the texts of manuscripts can be related to each other using the relationships of their variants*.

To illustrate how this works, consider two manuscripts, *A* and *B*. At any point of comparison, their text can be related in only one of these ways:

1. They agree with each other: *A* = *B*
2. They disagree with each other, and either
   2a. One derives from the other: *A* → *B* or *A* ← *B*, or
   2b. Their relationship is uncertain: *A* –?– *B*

It is the use of the *2a* type of relationship (where one text derives from the other) that really sets the CBGM apart from other genealogical methods. Where other such methods only use select *agreements* (*A* = *B*) to relate texts of manuscripts,[5] the CBGM also uses the direction of their *disagreements* (*A* → *B* or *A* ← *B*). Specifically, it uses agreements to show how closely related two texts are but then also uses their disagreements to show which of the two texts is more likely to be the ancestor of the other.

Within the CBGM, the existence of agreements between texts of manuscripts is primarily a matter of observation (Do the texts agree?), whereas the direction of disagreements is a matter of editorial judgment (How do they relate?). This means that the CBGM uses a unique combination of both objective *and* subjective data to relate texts to each other. At its

5. The general principle of these so-called "Lachmannian" methods is that shared "errors" among manuscripts imply shared ancestry. Here an error is a reading that is clearly not original and also not easily corrected or repeated by scribes independently. For an introduction to this venerable method, see Paolo Trovato, *Everything You Always Wanted to Know about Lachmann's Method: A Non-standard Handbook of Genealogical Textual Criticism in the Age of Post-structuralism, Cladistics, and Copy-Text*, rev. ed., Storie e linguaggi (Padova: Libreriauniversitaria.it, 2017).

most objective, deciding whether two texts agree at a point of comparison involves minimal judgment (it does require some, as we will see). At its most subjective, the CBGM requires the user to make his or her own decisions about how variant readings relate to each other. Whether $A \rightarrow B$ or $A \leftarrow B$ at a particular point is determined by the user of the method, *not by the computer*. This determination involves all the traditional skill and ability that textual critics have practiced for centuries. In this way, even as the CBGM can offer new help in making such judgments, it actually requires more work from the editor, not less, since it builds on thousands of such decisions.

If the CBGM differs from other methods used for relating texts, it does share the same general goal. That goal is to leverage textual relationships to evaluate witnesses and decide between their variants. The more we know about witness relationships, the better able we are to determine the textual tradition's origin. All genealogical methods function like a family tree. Just as your own family tree helps you to distinguish your sister from your cousin when tracing your family's origin, so it helps to know a textual "sister" from a "cousin" when tracing a textual tradition's origin. The more detail we have about how witnesses relate, the better we know how much weight to give them when dealing with the differences between them.

To recap, then, the CBGM can be thought of as a set of tools based on a new way of relating the texts of manuscripts. Both the tools and the principle of relating texts are designed to help us better understand the history and origin of the New Testament text. Both aims are explored in detail in the chapters that follow.

1.3. How the CBGM Is Changing Textual Criticism

The features unique to the CBGM just mentioned are enough to warrant scholarly attention. But beyond these, the method is also significant in that it has ushered in a number of changes to the most popular editions of the Greek New Testament and to the practice of New Testament textual criticism itself.

1.3.1. Textual Changes

The first and most obvious changes introduced by the use of the CBGM are changes to the text of the NA/UBS editions. In the Catholic Letters, there

are a total of thirty-four such changes, and in Acts there are fifty-two.[6] In most cases these are of minor significance for interpretation or translation. In the Catholic Letters, most are not even included in the UBS[5] apparatus, but a few deserve our attention.

The choice of subject in Jude 5, for example, is a notoriously difficult textual problem. Where the text of previous editions said that "the Lord" (ὁ κύριος) once saved a people from Egypt, it now attributes this ancient deliverance to "Jesus" (Ἰησοῦς) himself,[7] a change with not insignificant implications for New Testament Christology.

In 1 Pet 4:16 Christians are encouraged not to be ashamed in their suffering but instead to glorify God. Previously, they were told to do so in bearing the *name* "Christian" (ἐν τῷ ὀνόματι τούτῳ), whereas now they are encouraged to do so in the *matter* of their suffering (ἐν τῷ μέρει τούτῳ).

A final example is from 2 Pet 3:10, where the previous editions said that in the last days the earth and all its works "will be found" (εὑρεθήσεται). The new NA/UBS text now reads just the opposite: the earth and all that is in it "will *not* be found" (οὐχ εὑρεθήσεται). The new reading sits much easier with the surrounding context but is only attested in a few Coptic and Syriac manuscripts (i.e., only in translations); there is no Greek manuscript support at all, which is quite exceptional. Clearly, these changes will affect not only modern Bible translations and commentaries but possibly even theology and preaching.

1.3.2. Slightly More Uncertainty about the Text Overall

A second type of textual change is less obvious but still worth noting. Along with the changes to the text just mentioned, there has also been a slight increase in the ECM editors' uncertainty about the text, an uncertainty that has been de facto adopted by the editors of NA/UBS.[8] In the previ-

6. These are listed in the introductions of each edition. We restrict our examples here to the Catholic Letters but will discuss some of the changes in Acts in later chapters.

7. Or, possibly to "Joshua."

8. It should be noted, however, that textual changes will not automatically be transferred from the ECM to the future NA/UBS editions. The NA/UBS editorial committee will assess the textual changes including the passages marked with a diamond in the ECM and decide independently (as a committee) which text to adopt and which passages to mark as uncertain.

ous editions of the NA and UBS, the editors marked certain words with square brackets if they were not "completely convinced" of their originality.[9] They still favored the reading in brackets but recognized the decision as difficult. In contrast, the newest editions have dropped the use of brackets in the Catholic Letters in favor of a diamond (♦) placed in the text and apparatus. This new symbol, adopted from the ECM, marks places where the ECM editors "formally refrain from any rating" as to which reading is preferred; in these instances the text of the primary line is split in the ECM edition.[10] In other words, their uncertainty is such that they refuse to offer any indication as to which reading they prefer. (In NA/UBS they still have to print one reading in the main text and one in the apparatus, of course, but this choice is apparently not intended to indicate any preference.)

In all, there were in the Catholic Letters thirty-two uses of brackets compared to forty-three uses of the diamond and in Acts seventy-eight cases of brackets compared to 155 diamonds.[11] This means that there has been an increase in both the *number* of places marked as uncertain and an increase in the *level* of uncertainty being marked. Overall, then, this reflects a slightly greater uncertainty about the earliest text on the part of the editors.

1.3.3. Rejection of Text-Types

The two previous changes are the easiest to quantify. However, the CBGM has also introduced several far-reaching changes in how the editors view and describe the history of the text. The most significant and, for that reason, controversial is that it has convinced the editors to abandon the concept of text-types traditionally used to group and evaluate manuscripts.[12]

9. NA^{27}, 49*.

10. ECM $IV^2/1$, 34*. The editors prefer to speak of "guiding line" at these passages where the primary line is split and displays two alternative variants (ECM $IV^2/1$, 37*).

11. Surprisingly, in the Catholic Letters there is overlap in only five of these cases, which means that the editorial uncertainty is usually in a different place, too. See appendix A in Peter J. Gurry, *A Critical Examination of the Coherence-Based Genealogical Method*, NTTSD 55 (Leiden: Brill, 2017).

12. For an accessible explanation of the history of the concept of text-types, see Tommy Wasserman, "Alexandrian Text," *Bible Odyssey*, https://www.bibleodyssey.org/en/places/related-articles/alexandrian-text.

For more than two centuries, New Testament scholars have spoken about the Alexandrian, Western, Byzantine (or Eastern or Syrian), and sometimes Caesarean texts. An early pioneer, J. A. Bengel (1687–1752), took on the task of sorting out the wealth of source materials in order to reconstruct the earliest text of the New Testament. He divided the textual witnesses into groups that he called "nations" and "families." J. S. Semler (1725–1791) and J. J. Griesbach (1745–1812) refined Bengel's scheme by connecting these textual groupings to geographical areas where the text might have been revised (apart from the normal copying). The divisions were as follows: Alexandrian (used by Origen); Western (Latin translations); and Eastern (used by Antiochian and Constantinopolitan churches). Griesbach added the fourth-century Codex Vaticanus, as well as additional Alexandrian church fathers, to the Alexandrian group.

Scholars have largely followed this division into three major groups, or text-types, to use the term established through the work of E. C. Colwell in the second half of the twentieth century. Although few scholars today associate these text-types with distinct locales, most still do associate them with distinct levels of importance. The Alexandrian is typically considered the most reliable text-type, with the Western, Caesarean, and Byzantine generally following in that order.

If one reads Bruce Metzger's well-known textual commentary that accompanies the UBS, the notion of text-types is absolutely essential to his explanation of the history of the New Testament text and, with it, to the practice of textual criticism itself.[13] The UBS committee's own explanations for its decisions are so regularly couched in these categories that it is hard to imagine Metzger's commentary without them. Their importance is well captured by Eldon Epp, who says that "to write the history of the NT text is to write the history of text types, and concomitantly to write also the history of the criteria for the priority of readings."[14]

For many, the practice of New Testament textual criticism can hardly be conceived of without these comfortable categories. But this is precisely what the editors using the CBGM have done. They have replaced

13. Bruce M. Metzger, *A Textual Commentary on the Greek New Testament*, 2nd ed. (New York: United Bible Societies, 1994).

14. Eldon J. Epp, "Textual Clusters: Their Past and Future in New Testament Textual Criticism," in *The Text of the New Testament in Contemporary Research: Essays on the Status Quaestionis*, ed. Bart D. Ehrman and Michael W. Holmes, 2nd ed., NTTSD 42 (Leiden: Brill, 2013), 519.

the relationships and value of text-types with the relationships and value of individual witnesses—well over one-hundred of them in the Catholic Letters. Because the computer can keep track of all these witnesses and their place in the transmission, there is no need to group them into a few text-types and relate these groups. More importantly, by focusing on individual witnesses, they completely bypass the difficult problem of defining text-types and their boundaries (see §2.3.1 below).[15]

One exception here is that the editors still recognize the Byzantine text as a distinct text form in its own right. This is due to the remarkable agreement that one finds in our late Byzantine manuscripts. Their agreement is such that it is hard to deny that they should be grouped. In fact, the editors using the CBGM do group them together, subsuming them in the apparatus under the symbol Byz. On the other hand, the editors want to avoid the term *text-type* to describe the Byzantine text because it brings with it the notion of a textual revision (or recension), a notion that persists in spite of the attempt to redefine text-types as a process.[16] In other words, the Byzantine textual tradition should be regarded as the result of a long process, albeit one that produced a distinct text form preserved in a huge group of similar manuscripts.

Further, it is also clear that there are unique "Western" readings in Acts, but the mutual agreement of their attesting witnesses is relatively poor. They disagree with one another at the same level as with non-Western witnesses. Therefore, the ECM editors are reluctant to identify the witnesses as belonging to a text-type and prefer to speak instead about a "'Western' cluster of variants" (rather than witnesses), a stratum of the New testament textual transmission that requires other methods than the CBGM to further explore because (1) the Greek witnesses attesting to

15. As even a strong defender of text-types, or "textual clusters," like Epp admits: "the tricky issue, of course, is determining, in percentage terms, what extent of agreement in readings joins members into a group, and what degree of separation in agreements determines the existence of a separate group" ("ibid., 571). For Epp's most recent attempt to identify two distinct texts in Acts, see Eldon J. Epp, "Text-Critical Witnesses and Methodology for Isolating a Distinctive D-Text in Acts," *NovT* 59 (2017): 225–96.

16. On this point, see Klaus Wachtel, "Colwell Revisited: Grouping New Testament Manuscripts," in *The New Testament in Early Christianity: Proceedings of the Lille Colloquium, July 2000*, ed. C-.B. Amphoux and J. K. Elliott, Histoire du texte biblique 6 (Lausanne: Zèbre, 2003), 31–43.

Western readings lack coherence and (2) these readings are attested partly by versional witnesses.[17]

The rejection of the concept of text-types as a means of understanding the history of the text is significant. What fruit this will bear in the long term remains to be seen. It also remains to be seen whether New Testament scholars more generally will accept the CBGM as a viable replacement to text-types. The issues are important and will, no doubt, be debated for some years to come. For our purposes, it is enough to note that the CBGM has led the editors of the NA[28]/UBS[5] to reject and replace what has been a fundamental concept in New Testament textual criticism.

1.3.4. Renewed Appreciation for the Byzantine Text

As just noted, the editors still accept a Byzantine group even if they do not view it as a traditional text-type. In fact, they do much more than merely accept it; they have reevaluated it and concluded that it should be given more weight than in the past. Particularly since the work of Westcott and Hort in the late nineteenth century,[18] the Byzantine manuscripts have been disparaged by a majority of New Testament textual critics as the least valuable for recovering the "original text" when considered as a whole. But when the CBGM was first used on the Catholic Letters, the editors found that a number of Byzantine witnesses were surprisingly similar to their own reconstructed text. This unexpected discovery encouraged a second look and led to a renewed appreciation for these manuscripts and their shared text. This, in turn, led them to revise all their earlier decisions where they had chosen against this shared Byzantine text. As a result, ten of twelve changes between their first use of the CBGM on the Catholic

17. Nevertheless, the ECM editors have made sure to include witnesses traditionally affiliated to the Western text in the initial phase of the CBGM (the evaluation of pregenealogical coherence; see ch. 3). For further discussion of a new approach to the Western text in Acts and the limitation of the CBGM in relation to this phenomenon, see ECM III/1, 31*–32*; Georg Gäbel's "'Western Text', 'D-Text Cluster,' 'Bezan Trajectory,' Or What Else? A Preliminary Study," in ECM III/3, 83–136; and Klaus Wachtel's "On the Relationship of the 'Western Text' and the Byzantine Tradition of Acts—A Plea against the Text-Type Concept," in ECM III/3, 137–48.

18. B. F. Westcott and F. J. A. Hort, *The New Testament in the Original Greek: Introduction, Appendix* (London: Macmillan, 1881), esp. 115–19, 132–35.

Letters and their second use are in favor of the Byzantine text, and they now consider it to be "an important witness to the early text" overall.[19] The situation in Acts is similar. There were fifty-two changes to the critical text. In thirty-six cases the changes were made in conformity with the Byzantine text and in only two cases against the Byzantine text. Further, in 105 of the 155 passages where the editors leave the decision open about the initial text, the Byzantine witnesses attest to the reading deemed to be of equal value to variant *a* (= NA[28]). In twenty of the 155 passages the Byzantine witnesses side with variant *a*.[20] As with the rejection of other text-types, the full impact of this shift must await work on the rest of the New Testament, but even now the changed appreciation is substantial when seen in light of nearly all of the last century of text-critical work on the New Testament.

1.3.5. A Slight Shift in Goal

A final, but important, shift has also come in terms of the editors' primary goal. Whereas textual critics have traditionally (though not always) pursued the "original text" of the New Testament, there has been a growing awareness in recent years about the ambiguity of the term.[21] Some believe that the term *original text* is simply too vague to be meaningful and is therefore a cause of confusion. Others go further and argue that the very notion of a single, authorial text for the New Testament is indefensible.[22]

In the midst of the debate, the CBGM has introduced a new goal and a new term to go with it. This new goal is to reconstruct, not the original text, but the *Ausgangstext*. This German term often refers to the source of a translation, and the prefix *Ausgangs-* is typically used to refer to a point

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19. ECM IV^2/2, 10. See Jas 1:20; 2:4, 15; 4:10; 1 Pet 5:1; 2 Pet 2:18, 20; 2 John 5, 12; 3 John 4. In each of these, there is support against the newly adopted reading from manuscripts such as P72, Sinaiticus (01), Alexandrinus (02), Vaticanus (03), and Ephraemi Rescriptus (04).

20. ECM III/1, 31*, 34*–37*.

21. On this point, see Eldon J. Epp, "The Multivalence of the Term 'Original Text' in New Testament Textual Criticism," *HTR* 92 (1999): 245–81.

22. For the best introduction to the debate, see Michael W. Holmes, "From 'Original Text' to 'Initial Text': The Traditional Goal of New Testament Textual Criticism in Contemporary Discussion," in Ehrman and Holmes, *The Text of the New Testament*, 637–88.

of departure (e.g., *Ausgangslage* or *Ausgangspunkt*). In the context of the CBGM, it means something like "starting-point text" and it is often represented with a capital *A*. In English, the term was first translated as "initial text," and the translation has stuck.

Unfortunately, the new goal and its new term have led to as much confusion and debate as the term *original text*![23] This is regrettable, not least because Gerd Mink, who coined the term *Ausgangstext*, has always been clear enough that the term has a single *meaning* with several possible *referents*. The meaning of the term is "the reconstructed form of the text *from which* the manuscript transmission started."[24] From this definition it follows that the initial text may refer to the author's text or to something later. That is because it is the text from which the manuscript tradition as we know it started.

Deciding exactly what text to reconstruct from the existing tradition is a challenge that faces any editor. As Mink explains, "different objectives of reconstruction are possible: authorial text, redactor's text, or the archetype of the tradition as preserved."[25] It is the duty of the editor to inform the readers of the objectives and the corresponding form of the text he or she has arrived at, which could potentially shift from book to book or from corpus to corpus. The editors of the Catholic Letters in the ECM are quite clear in stating that, "following the most simple assumption, we claim that the present reconstruction is a hypothesis about the texts of the authors."[26] This is why we say that the CBGM's shift to the initial text as the proper goal is a *slight* shift. The editors are essentially saying that they see no reason to believe there is any great difference between their initial text for the Catholic Letters and the authors' original text.[27] Other editors may,

23. The issues are discussed in greater detail in Gurry, *Critical Examination*, 90–101.

24. Gerd Mink, "Contamination, Coherence, and Coincidence in Textual Transmission: The Coherence-Based Genealogical Method (CBGM) as a Complement and Corrective to Existing Approaches," in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*, ed. Klaus Wachtel and Michael W. Holmes, TCS 8 (Atlanta: Society of Biblical Literature, 2011), 143, emphasis added.

25. Ibid.

26. ECM IV^2/1, 30*.

27. We hasten to add that the editors' use of the diamond in forty-three cases

of course, find that a different assumption is warranted, and then the shift may be more significant. Time will tell.

Depending on the user of the method and the text that is being reconstructed, then, any number of aims are possible, and the CBGM by itself does not determine which one is valid. That is why Mink emphasized that several possible *referents* of the term *Ausgangstext* are possible; the term itself does not prejudge the matter.

In our opinion, however, it makes little sense to appeal to authorial style or theology if we do not think we have the approximate author's text.[28] So, the decision does affect somewhat the evidence to which we may appeal. Nevertheless, the shift in terminology is important for just this reason: it reminds us that we cannot simply *assume* whether the text from which our extant tradition developed (i.e., the initial text) is the author's text or something further removed from it. In either case, our conclusion about how far back we can reach needs to be justified. In this, the new term has the benefit that scholars can often work together on significant text-critical projects even if they do not agree exactly in their views of textual history or about what text they have arrived at once they agree on the form of the initial text itself.[29]

1.4. Why This Book

In view of these five changes that the CBGM has ushered in, it should be obvious why the CBGM deserves careful consideration. Some scholars have already given the method high praise as a "major breakthrough," a "significant advance," an "exciting and stimulating development," one that is based on "an essentially simple but brilliant stroke."[30]

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in the Catholic Letters shows that they are not always able to arrive at their own initial text and hence at the authors' text.

28. For this point, see Tommy Wasserman, "Was There an Alexandrian Recension of the Living Text of the Gospels?," in *Liturgy and the Living Text of the New Testament*, ed. H. A. G. Houghton, Texts and Studies Third Series (Piscataway, NJ: Gorgias, forthcoming).

29. For example, compare the different views of the textual history reflected in the respective essays of the two ECM editors Holger Strutwolf and David Parker in Wachtel and Holmes, *Textual History of the Greek New Testament* (chs. 1 and 2).

30. Quotes are, respectively, from Tommy Wasserman, "Criteria for Evaluating Readings in New Testament Textual Criticism," in Ehrman and Holmes,

Despite this high praise, the reaction to the CBGM has typically fallen into one of two categories. In the first are those who are curiously optimistic about it. In our experience, scholars, students, pastors, and translators want to know why a part of their Greek New Testament is now different. They naturally want to understand what the changes mean and why they are being made. They also want to know how they can use the new method in their own work, but they have struggled to understand it.

A second reaction has been from those who are more cautious, perhaps confused, and, in some cases, even frustrated or suspicious. The CBGM is certainly not the easiest thing to understand. Its diagrams, numbers, and statistics seem to defy simple explanation. As Stephen Carlson says, "I have to admit that the CBGM looks like a mysterious black box whose inner workings seem inscrutable."[31] Likewise, one of our most experienced textual critics has confessed that "many will admit that the functioning of the CBGM is not always easily grasped."[32] Given that the method can be difficult to understand, it is perfectly understandable that some have felt frustrated by its procedures and results. Regardless of one's theological views, the New Testament is one of the most significant works in history and, appropriately, changes to its text are not treated lightly.

The good news is that this book is written for both groups—the curious and the frustrated. For those who think of the CBGM as a "black box," a complex and mysterious device whose internal workings are known only to the initiated, this book is designed to open the box and dispel the mystery. For those who are curious or even eager to utilize the method, we

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The Text of the New Testament, 607; Scott Charlesworth, "Review of *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*," *TC* 18 (2013): §15, http://purl.org/TC/v18/TC-2013-Rev-Wachtel-Charlesworth.pdf; Gregory R. Lanier, "Sharpening Your Greek: A Primer for Bible Teachers and Pastors on Recent Developments, with Reference to Two New Intermediate Grammars," *Reformed Faith & Practice* 1 (2016): 138; David C. Parker, *An Introduction to the New Testament Manuscripts and Their Texts* (Cambridge: Cambridge University Press, 2008), 169.

31. Stephen C. Carlson, "Comments on the Coherence-Based Genealogical Method," *TC* 20 (2015): 1, http://purl.org/TC/v20/TC-2015-CBGM-Carlson.pdf. This from one who has made substantial use of computer-assisted methods in textual criticism. See his *The Text of Galatians and Its History*, WUNT 2/385 (Tübingen: Mohr Siebeck, 2015).

32. Epp, "Textual Clusters," 550. Lanier admits, "Describing the CBGM is not for the faint of heart" ("Sharpening Your Greek," 139).

hope this book will show how to make the most of it while avoiding its misuse. Despite the explanations that currently exist, there remains a need for an accessible, student-friendly user's guide to the CBGM. The present book is designed to be that: a helpful, clear introduction for both the trained scholar and the beginning student.

One thing this book is not: it is not a critical examination or test of the method. That work is important and necessary, and both authors have engaged in that elsewhere.[33] We have both come away from our study of the method convinced that it is, as a whole, a valuable and important advance in textual criticism. Importantly, we have both come to this conclusion as outsiders, as neither of us is an editor of the ECM or employed by the institutes who are working on it. But we feel that the immediate need is not for another critique. Rather, the present need is for a simplified explanation of how to use it, one that is both clear and accurate and written for the uninitiated. In the final chapter, we do offer some of our thoughts on how the method can be improved, but the bulk of the book is dedicated to explaining it, not testing or critiquing it. For the most part, we entrust readers to make up their own minds about the method's promise or peril.

1.5. Preview

The structure of the book is designed to guide readers through each part of the CBGM, step by step. The next chapter begins with some context for the method's development before offering a bird's-eye view of the whole process. We explain why the method was developed in the first place and how its various parts fit into the larger whole. This should give some important reference points for when we tackle specific aspects of the method in much greater detail.

Chapters 3 and 4 focus on the CBGM's signature concept, coherence, and show how the two main types of coherence work, how they help determine the connectivity of variants, and how they are used in the form of textual-flow diagrams. Each chapter gives a number of illustrations of how

33. See Gurry, *Critical Examination*; Wasserman, "Criteria for Evaluating Readings"; Wasserman, "The Coherence Based Genealogical Method as a Tool for Explaining Textual Changes in the Greek New Testament," *NovT* 57 (2015): 206–18; Wasserman, "Historical and Philological Correlations and the CBGM as Applied to Mark 1:1," *TC* 20 (2015), http://purl.org/TC/v20/TC-2015-CBGM-Wasserman.pdf.

both types of coherence are used for solving specific textual problems. In many ways, these two chapters are the heart of the book. We will tell you now that these two will require the most effort on your part as the reader. This is because it is here that we walk you through the process of actually using the CBGM to determine the initial text.

Chapter 5 takes us to the "global stemma," or the overall "family tree" of textual relationships that emerges from the method. This stemma is global because it accounts for all the data collected by the method and presents us with the overall implications of our own textual decisions. It operates both as a corrective to our previous textual decisions and as a springboard for further study of the text. Although a complete global stemma has yet to be produced, we will use one part of the stemma we produced for the Catholic Letters to show its value for clarifying the origin of the Byzantine text there.

Chapter 6 takes a step back to consider the CBGM more broadly. In particular, we discuss some important limitations of the method and suggest some possible improvements for future versions. Both of these topics are important. As with any new method, the CBGM may tempt us to claim too much for it if we are not careful. In order to avoid abusing it, then, we need to consider some of its limitations. We also look ahead at a number of promising ways in which the method can be developed. Our hope is that this will inspire others to engage the method and push it beyond some of its current limits.

We close the book with suggested reading and a glossary of terms. The suggested reading is not exhaustive; it points to works we consider to be the most important or the most helpful. For easy reference, each term listed in the glossary is listed at the end of each chapter where we first discuss it in detail. We hope this helps ease some of the shock that comes from the CBGM's many technical terms.

We turn now to consider how the CBGM developed and how it works as a whole.

1.6. Key Terms

- initial text
- text-type
- textual cluster

2
Overview of the Method

Here we provide a bird's-eye view of the CBGM. We tell why it was developed and how it relates to the ECM and NA^{28}/UBS^{5}. Then we place it in the larger context of genealogical methods in general and explain how the CBGM addresses the problems of textual contamination and editorial inconsistency. Finally, we briefly introduce the different types of coherence and stemmata that you will encounter in later chapters.

The previous chapter introduced the CBGM as a major development in New Testament textual criticism. This chapter begins to explain this new method by providing a broad overview. The CBGM can sometimes seem opaque and incomprehensible. To alleviate this problem, this chapter is meant to orient you to the method's history, goals, and main features. Think of it as an aerial survey before we start our trek.

2.1. History of the Method

Most of humankind's greatest tools are invented by necessity. A particular problem presents itself, and humans work to find solutions for it. The CBGM is no different. It was invented to solve a specific problem. Because of this, we can best understand it by knowing something about who developed it and why.

The story starts in Münster, Germany at the Institut für Neutestamentliche Textforschung (INTF) or Institute for New Testament Textual Research. The INTF was founded in 1959 by Kurt Aland (1915–1994), whose name is most familiar from the New Testament edition that bears his name, the Nestle-Aland (NA). Since its founding, the INFT has been responsible for producing the NA edition and has also been involved in the production of the United Bible Societies *Greek New Testament* (UBS).

(In 2011 the United Bible Societies appointed a new editorial committee that will prepare future eaditions of both the NA and UBS.) Along with his work on a "hand edition" of the Greek New Testament, one of Aland's larger goals was to produce a new *editio critica maior*, or "major critical edition," one that would replace Constantine von Tischendorf's famous eighth edition (*Octava Critica Maior*) that was the standard in the late nineteenth and early twentieth centuries. The goal of such an edition was to provide scholars with all the data needed to reconstruct the earliest text and to tell its subsequent history.[1] As we will see, this major edition developed alongside the CBGM, resulting in a close, almost symbiotic relationship between them.

As part of this larger work, Aland was an early pioneer in using computers for textual criticism, and the institute was always eager to leverage new technology.[2] One person involved in such work at the institute was a researcher named Gerd Mink. Following his important work on Coptic translations of the New Testament, Mink turned his attention in the 1980s to what would become the CBGM. Initially, his goal was to find new manuscript groups using computer databases, but his work soon developed well beyond this. His very first publication on his work with computers was titled "On the Stemmatizing of New Testament Manuscripts," published in 1982. This short article marks the beginning of what would become the CBGM, and already many of Mink's key ideas are present.[3]

What Mink wanted was to find a way to relate Greek New Testament manuscripts despite their wildly intermixed nature, a feature that makes it difficult to sort out their true relations. This problem, known as contamination, has plagued textual scholars for centuries. Without a solution, most New Testament textual scholars have resorted to relating *groups* of

1. The original plan for the ECM is given in Kurt Aland, "Novi Testamenti Graeci Editio Maior Critica: Der gegenwärtige Stand der Arbeit an einer neuen grossen kritischen Ausgabe des Neuen Testamentes," *NTS* 16 (1970): 163–77.

2. See, for example, Kurt Aland, "Neutestamentliche Textforschung und elektronische Datenverarbeitung," in *Bericht der Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung für die Jahre 1977 bis 1979* (Münster: Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung, 1979), 64–84.

3. Gerd Mink, "Zur Stemmatisierung neutestamentlicher Handschriften," in *Bericht der Hermann Kunst-Stiftung*, 100–114.

manuscripts instead of the manuscripts themselves.[4] Typically, these have taken the form of text-types, which we mentioned in the last chapter. Mink, however, found such groupings unsatisfactory, and his key insight was to abandon the quest to relate *manuscripts* (or groups of them) and instead focus on the narrower quest to relate their *texts*. This distinction between manuscript and text is absolutely fundamental to the CBGM, and it is present already in Mink's first essay. As we will see in chapter 5, this distinction raises important questions about how to use the CBGM to understand the text's historical development.

At this point Mink was only working from a tiny selection of data; this began to change with the publication of the first fascicle of the ECM in 1997, covering James (ECM IV/1.1). Although this first volume did not make any use of Mink's developing method, the massive amount of data collected for it became the main catalyst for change. Whereas the book of James had previously provided only twenty-five places to compare manuscripts (using the *Text und Textwert* data), the new ECM offered Mink 761 places—a thirty-fold increase in data. At the same time, software developed to semiautomate the process of finding and registering differences between manuscripts (known as collating) was being improved and customized specifically for the ECM.[5] The time was ripe for Mink's method to expand by harnessing this massive influx of data.

The outcome was the development of the CBGM's signature concept: coherence. The publication of the ECM installment of 1–2 Peter in 2000 marked the first published use of Mink's method on the New Testament. There the reader learns that coherence, though only briefly explained, is now "an important factor in the evaluation of variants."[6] A full explanation

4. For an incisive look at the history and nature of the problem, see E. C. Colwell, "Genealogical Method: Its Achievements and Its Limitations," in *Studies in Methodology in Textual Criticism of the New Testament*, NTTS 9 (Leiden: Brill, 1969), 63–83.

5. The software, known as *Collate*, was developed by Peter Robinson, another pioneer in computer-aided textual criticism. For its use on the New Testament, see Klaus Wachtel, "Editing the Greek New Testament on the Threshold of the Twenty-First Century," *Literary and Linguistic Computing* 15 (2000): 47–48; H. A. G. Houghton and Catherine J. Smith, "Digital Editing and the Greek New Testament," in *Ancient Worlds in Digital Culture*, ed. Claire Clivaz, Paul Dilley, and Hamidović David, Digital Biblical Studies 1 (Leiden: Brill, 2016), 116–17.

6. ECM IV/1.2, 23*.

would only come later in separate publications. The editors also revisited their work on James and made several additional changes. The next two installments for the Catholic Letters covered the texts of 1 John, and then 2–3 John and Jude and were published in 2003 and 2005, respectively (ECM IV/1.3 and 1.4). Already in the third installment, the CBGM is described as "characteristic of the edition."[7] In just eight years, the method had gone from unused to definitive.

With Mink's method now firmly in place, a growing need to explain it to outsiders arose. Along with a number of print publications,[8] the INTF hosted textual critics from around the world for a special, invitation-only meeting in 2008. The second day was devoted to a robust explanation of the CBGM by Mink himself. The resulting 577-slide presentation was later published online and later still in print form along with the other presentations.[9] To date, it remains one of Mink's most important and thorough explanations of his method.

Finally, in 2013 the editors published a revision of the whole ECM IV for the Catholic Letters, reapplying the CBGM throughout. The results from this revision would receive their widest circulation so far when they were adopted as the text for the new NA^{28} published in 2012 and the UBS^{5} in 2014. As noted in the last chapter, the text of these editions changed in thirty-four places in the Catholic Letters compared to their previous editions and increased the number of places marked as uncertain. If we include the first edition of the ECM IV in our comparison, the text or the editors' certainty about it changed in 125 places among the three phases of work represented in NA^{27}/UBS^{4}, the ECM IV^{1}, and the ECM IV^{2}/NA^{28}/

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7. ECM IV/1.3, preface.

8. Gerd Mink, "Editing and Genealogical Studies: The New Testament," *Literary and Linguistic Computing* 15 (2000): 51–56; Mink, "Was verändert sich in der Textkritik durch die Beachtung genealogischer Kohärenz?" in *Recent Developments in Textual Criticism: New Testament, Other Early Christian and Jewish Literature; Papers Read at a Noster Conference in Münster, January 4–6, 2001*, ed. Wim Weren and Dietrich-Alex Koch, Studies in Theology and Religion 8 (Assen: Van Gorcum, 2003), 39–68; Mink, "Problems of a Highly Contaminated Tradition: The New Testament; Stemmata of Variants as a Source of a Genealogy for Witnesses," in *Studies in Stemmatology II*, ed. Pieter van Reenen, August den Hollander, and Margot van Mulken (Philadelphia: Benjamins, 2004), 13–85.

9. Mink's "Introductory Presentation" (2009) is available at http://www.uni-muenster.de/INTF/cbgm_presentation; the conference papers are found in Wachtel and Holmes, *The Textual History of the Greek New Testament*.

UBS5.[10] For the text of Acts, the application of the CBGM resulted in fifty-two places where the text was changed, with 155 textual decisions left open by the editors.[11]

Currently, the plan is to apply the CBGM to the text of John and soon Mark, Revelation, and beyond. These changes will appear in future editions of the NA and UBS texts.[12] Clearly, the CBGM has reached a point of maturity, one that warrants attention from all who seriously study the Greek New Testament.

2.2. The Main Problems the CBGM Addresses

If what has been said so far explains how the CBGM developed, we still have not explained why. To understand that, we need to know something about the main problems it was designed to address.[13] These are contamination, coincidental agreement, and editorial inconsistency. The first two are problems with the tradition itself; the last is a problem the other two present for editors.

2.2.1. Textual Contamination

Textual contamination is the result of one manuscript deriving its text from multiple other manuscripts. One way this can happen is when scribes correct one manuscript against another. This is starkly illustrated in one of the most famous and most corrected of all New Testament manuscripts: Codex Sinaiticus, from the fourth century.[14] By one count,

10. For the complete list, see Peter J. Gurry, *A Critical Examination of the Coherence-Based Genealogical Method in the New Testament*, NTTSD 55 (Leiden: Brill, 2017), appendix A.

11. ECM III/1, 28*, 34*–37*.

12. The result is that we can expect these editions will continue to exist for many years to come in a "hybrid" form in which part of the text has been revised using the CBGM and part has not.

13. None of these problems is unique to the New Testament, but they are particularly acute here because the New Testament has been so frequently copied for so long. This is both the blessing and the curse of New Testament textual criticism: we have been left with so much evidence that it eludes our best efforts at complete explanation.

14. Other examples of heavily corrected manuscripts are P66 and minuscule 424.

this manuscript has some 23,000 corrections in about 800 pages. That is almost thirty per page![15] These were made by multiple correctors over the centuries, and many of them are only changes in spelling. But imagine being charged with copying Codex Sinaiticus with all its corrections. As a scribe, you would have to choose on almost every page whether to follow the corrected text or to reject it for the original, uncorrected text. Many scribes in this situation would no doubt follow now one and now the other, producing, in effect, a text with no simple pedigree. This is what is meant by contamination. Across the span of hundreds of years, such contamination clearly happened again and again with the result that the New Testament "affords, beside Homer, the paramount example of a 'contaminated tradition.'"[16]

Such contamination presents a major problem for traditional methods of relating manuscripts. Known by the name of their most prominent proponent, Karl Lachmann (1793–1851), such methods depend on the principle that *shared, distinctive textual errors imply shared origin*.[17] Where manuscripts share an obvious mistake, one that is not likely to be made more than once nor corrected later on (e.g., an omission of a whole paragraph), then this agreement implies that they share a common ancestor not shared by the other manuscripts in the tradition. By careful observation of such shared errors, the scholar practicing the Lachmannian method can often determine a series of relationships between manuscripts. This, in turn, allows for a significant reduction in the number of manuscripts, and with them their variants, that deserve one's attention. If we know, for example, that manuscripts C, D, and E all derive from B, then we can focus most of our attention on B and set C, D, and E aside. In this, Lachmannian

15. Klaus Wachtel, "The Corrected New Testament Text of Codex Sinaiticus," in *Codex Sinaiticus: New Perspectives on the Ancient Biblical Manuscript*, ed. Scot McKendrick, David C. Parker, Amy Myshrall, and Cillian O'Hogan (London: British Library, 2015), 97. These numbers are partially taken from David C. Parker, *Codex Sinaiticus: The Story of the World's Oldest Bible* (Peabody, MA: Hendrickson; London: British Library, 2010), 3.

16. Günther Zuntz, *The Text of the Epistles: A Disquisition upon the Corpus Paulinum*, Schweich Lectures 1946 (London: Oxford University Press, 1953), 9.

17. For good introductions to this method, see Trovato, *Everything You Always Wanted to Know*; and Paul Maas's concise but classic *Textual Criticism*, trans. Barbara Flower (Oxford: Clarendon, 1958).

methods allow textual scholars to sift the most important evidence and thereby recover the earliest text with more confidence.

The problem faced by all such "common error" methods is that they work well only in textual traditions where the manuscripts are not contaminated (that is, where each witness has descended from a single ancestor). Where the tradition is contaminated, one cannot assume that a shared error implies *shared* ancestry; instead, it may only imply *multiple* ancestry. At its worst, contamination can flip the historical relationships of manuscripts.

We can illustrate with a simplified example. Imagine a tradition with four manuscripts, *A*, *B*, *C*, and *D*. Where *A* and *B* share a distinctive error against *C* and *D*, then we can assume that *A* and *B* share an ancestor not shared by *C* or *D*. We could call *A* and *B*'s shared ancestor α. If there was a similar error shared by *C* and *D* against *A* and *B*, then we could call their shared ancestor β. In this way, wherever three of our four witnesses agree, we can be confident we have the text of the ancestor shared by all four, a manuscript known as the "archetype," which we can call Ω. The resulting tree would be drawn up in the form of figure 2.1. (For this example, we assume that *A* is not *B*'s ancestor and vice versa and the same with *C* and *D*.)

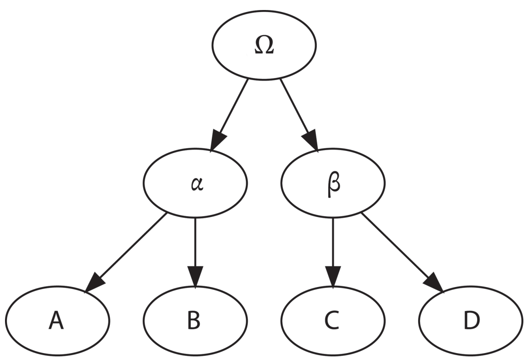


Fig. 2.1. The relationship of our four witnesses based on their shared errors

But now imagine that *B* was not only copied from α but also corrected against *C* so that the shared error copied from α was fixed without a trace. In that case, *B* would appear to be a descendent of β rather than α even though it has, in fact, been influenced by *both*. The incorrect stemma that the common error method would produce would, then, look like that shown in figure 2.2.

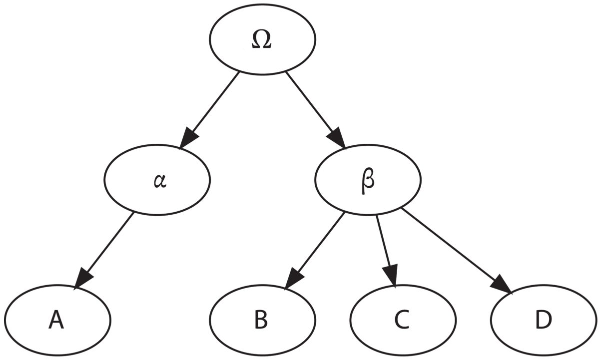


Fig. 2.2. The misrepresentation of the relationship between A, B, C, and D resulting from contamination between B and C

In more severe cases, contamination may affect the Lachmannian method so much that descendants switch places with their own ancestors, thus reversing their actual relationship.[18]

The CBGM addresses this fundamental problem in several ways. First, it allows witnesses to have multiple ancestors while also foregoing hypothetical intermediate ancestors known as hypearchetypes (like α and β). This makes it much easier to represent contamination. Second, as we have seen, it only tries to relate texts, not the material manuscripts that contain them. This is because texts can relate in ways their manuscripts cannot. For instance, a young manuscript may have a very old text that may then be ancestral to the text of an older manuscript. Finally, and most importantly, the CBGM determines ancestry using a different principle. Rather than relating witnesses deductively based on shared errors, it relates them inductively using the relationship of their variants as determined by the editor. One upshot of this is that the CBGM can use far more data to relate witnesses than traditional Lachmannian methods. This does not mean, however, that the CBGM has completely solved the problem of contamination, as we will see. In fact, there are still scenarios where contamination presents a problem for the CBGM.[19] Still, the differences mentioned here

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18. See the example in Michael W. Holmes, "Working with an Open Textual Tradition: Challenges in Theory and Practice," in Wachtel and Holmes, *The Textual History of the Greek New Testament*, 65–78.

19. This is recognized by Mink in "Problems of a Highly Contaminated Tradition," 67; it is discussed in detail in Gurry, *Critical Examination*, ch. 5.

do put the CBGM in a much better position to detect contamination and to work in spite of it in many cases.

2.2.2. Coincidental Agreement

A second problem that threatens to ruin our efforts at relating witnesses is known as coincidental agreement, sometimes called accidental agreement. In our hypothetical example above, we noted that, in Lachmannian methods, the agreement must be one that could not easily be made more than once by different scribes. If it was easy to make, then the principle that shared agreement implies shared ancestry would fail again. The reason is that, if, for example, two scribes can omit a word or phrase *independently* of each other, then their agreement in that omission tells us nothing about their *shared* relationship. Such agreements are called coincidental agreements because the manuscripts that share them do so by happenstance rather than because they are closely related.

The CBGM takes a novel approach to such coincidental agreements. Rather than excluding any and all agreements that we think *could* be coincidental, the CBGM uses the overall agreement between witnesses to decide whether specific agreements *are* coincidental. Where two witnesses agree to a relatively high degree overall, then even their agreements in small matters are deemed to be genealogically significant. If, say, two witnesses show a 99 percent agreement overall, then even their agreement in reading "and" (*καί*) instead of "but" (δέ) is probably significant. On the other hand, this same agreement among witnesses with low overall agreement would be judged coincidental if other evidence pointed that way. In the parlance of the CBGM, agreements are described as more or less *connective* depending on how likely they are to *connect* the witnesses that attest them. In other words, a connective agreement is one that is not coincidental.

It is important to emphasize that this connectivity is always determined in concert with our text-critical knowledge of the variant in question. The CBGM is *not* making the decision for us; rather, it is providing a new type of evidence in the form of coherence to help us decide. As Mink says, a variant shared by two or more witnesses is connective "(i) if the witnesses generally agree to such a degree that coincidental match can be excluded or (ii) if the variant is too extraordinary to have emerged repeatedly."[20] In

20. Mink, "Contamination, Coherence, and Coincidence, 143.

this way, the CBGM provides us with additional information to help us decide when an agreement may be connective and when it may not be. We will explore specific examples in the following chapters.

2.2.3. Consistency in Textual Decisions

A third and final problem that the CBGM helps address is one of editorial inconsistency. Across the Catholic Letters, the ECM editors were faced with a total of 3,046 places of variation from a comparison of 203 manuscripts wherever they were extant.[21] Obviously, tracking the relationships of all these manuscripts at all these places is too much for the human mind alone, and inconsistency is therefore unavoidable. But if the computer keeps track as it does in the CBGM, then it can begin to feed this accumulated data back to the editors so they can start to see trends in their own decisions. The result is that the editors can be much more consistent in making decisions than would realistically be possible otherwise. As Michael Holmes explains, "each variation unit is a piece of a larger mosaic, and each individual textual decision implies something about the history of transmission as a whole."[22] What has been missing before the CBGM was any realistic way to see the overall picture developing from each individual piece of the mosaic. As Holmes, who edited the SBLGNT, says, "It is in this respect that the CBGM will be of value, for it offers the textual critic a means by which to assess and analyze the larger implications of individual textual decisions."[23]

2.3. Two Types of Coherence

Now that we have identified the main problems addressed by the CBGM, we need to consider how it addresses them. The primary way is through the use of coherence. Already we have considered how coherence can help address the problem presented by coincidental agreement. Now we must consider the two main types of coherence in the CBGM.

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21. Ibid., 147. The number of variant passages decreased to 3,043 in a later revision. The number of included manuscripts in the published ECM varies between different books (James: 186; 1–2 Peter: 147; 1 John: 145; 2–3 John and Jude: 151). See ECM IV^2/2, 5–9.

22. Holmes, "Working with an Open Textual Tradition," 78.

23. Ibid.

2.3.1. Pregenealogical Coherence

The first and most basic type of coherence is known as pregenealogical. It is not a new type of evidence, but its use in the CBGM is. Pregenealogical coherence is the percentage agreement between the texts of any two witnesses at all places of variation where both are extant and legible. It is what textual critics have traditionally called quantitative analysis.[24] If manuscript *A* and manuscript *B* are compared at one hundred places and disagree at twenty, then their pregenealogical coherence is 80 percent (eighty out of one hundred). In this, pregenealogical coherence is a purely quantitative measure of textual agreement. In the Catholic Letters, the highest level of agreement is 99.1 percent, shared between 614 and 2412.[25] In all, they only disagree in twenty-seven places out of 2,859. The lowest agreement between any two witnesses is 77.8 percent, shared between 1241 and 1838. These two disagree with each other at 624 of 2,816 places. The average agreement between all pairs of witnesses is 87.6 percent.[26] The results from Acts show similar levels: the highest is 98.8 percent, shared between 1270 and 1297; the lowest is 63.4 percent, shared between 05 and 441.[27] In the case of 05, its average agreement with all other witnesses is quite low (about 66 percent). This is not surprising, given the unique character of Codex Bezae's

24. See, e.g., E. C. Colwell and E. W. Tune, "The Quantitative Relationships Between MS Text-Types," in *Biblical and Patristic Studies in Memory of Robert Pierce Casey*, ed. J. N. Birdsall and R.W. Thomson (Freiburg im Breisgau: Herder, 1963), 25–32; repr. as "Method in Establishing Quantitative Relationships Between Text-Types of New Testament Manuscripts," in Colwell, *Studies in Methodology*, 56–62.

25. The close relationship of these two manuscripts has been noted ever since Kenneth W. Clark provided a collation of 2412 and suggested that the older Codex 2412 could be the exemplar of Codex 614 (*Eight American Praxapostoloi* [Chicago: University of Chicago Press, 1941] 35–37). The CBGM results for Acts list 2412 as the closest potential ancestor of 614. Although the manuscripts are likely siblings, these results confirm Clark's proposal (which was based on the age of the manuscripts) that 2412 is the head of "group 614." At least in Acts, we suggest that 2412 should be cited instead of (or along with) 614 in future editions of NA.

26. Mink, "Contamination, Coherence, and Coincidence," 157 n. 25.

27. See the Comparison of Witnesses module at http://ntg.cceh.uni-koeln.de/ph4/. For Acts, we refer only to continuous text manuscripts. There are a few higher or lower agreements when fragmentary witnesses are included (e.g., 206s and 18 agree at just over 98.8 percent, and P127 and 629 agree at only 43.1 percent).

text in Acts. Among other things, these numbers show just how well these portions of the New Testament text have been preserved overall. Wachtel says of Acts that "most witnesses agree with each other at most variant passages," and this could also be said of the Catholic Letters.[28] Positively, the overall high level of agreement among our witnesses is what makes pregenealogical coherence such a promising tool in practice. We will see how in the following chapters. Negatively, it is precisely these agreement levels that have challenged the traditional notion of text-types that was based on limited collations of selected manuscripts.

2.3.2. Genealogical Coherence

The second type of coherence builds on the first. Losing the prefix, it is simply called genealogical coherence. Whereas *pre*genealogical coherence only tells us *how closely* two witnesses are related, genealogical coherence also tells us the *direction* of their relationship. Recalling the ways that the relationship between any two witnesses is determined (*A* = *B*; *A* → *B* or *A* ← *B*; *A* –?– *B*), pregenealogical coherence only accounts for the first (*A* = *B*), whereas genealogical coherence includes all three. The direction of the relationship is taken directly from the editors' own decisions made at each place of variation. At each such point where a variant is either prior or posterior to another variant, the computer tracks which witnesses attest each variant and then uses this to compile the information that constitutes genealogical coherence. The result is best expressed in table format and can be illustrated using 01 and 03. Their genealogical coherence is shown in table 2.1.

Table 2.1. The genealogical coherence between 01 and 03

Places of Comparison	01 = 03	01 → 03	01 ← 03	01 –?– 03
3,003	2,613	89	250	51

The first thing to notice is that this table includes the agreements that form pregenealogical coherence. Here the agreements amount to 87.1 percent of their compared text (2,613 of 3,003).[29] But this table tells us more.

28. Klaus Wachtel, "The Coherence Method and History" (paper presented at the Society of Biblical Literature Annual Meeting, San Diego, November 2014).

29. The total places of comparison in the online module is listed as 2,999,

It also indicates the predominant *direction* of their relationship in the third and fourth columns. The data in these columns is based on the editors' own textual decisions at each point where the two texts disagree. From this, we can conclude that, when 01 and 03 disagree in the Catholic Letters, the editors of the ECM thought that the reading found in 03 was prior to the reading of 01 a total of 250 times. The reverse is true only 89 times. This ratio is used to determine textual ancestry in the CBGM. We say *textual ancestry* because the CBGM is not suggesting that Codex Sinaiticus (01) was directly copied from Codex Vaticanus (03). The relationship is a more abstract one. It is not a relationship between *manuscripts* but between the *texts* conveyed in them. Since 03 has the prior text overall in relation to 01, its text is considered one of multiple *potential* ancestors for 01 within the CBGM. Determining whether it is more than just a potential ancestor requires additional labor. This brings us to our next major aspect of the CBGM: stemmata.

2.4. Three Types of Stemmata

The English word *stemma* derives from the Latin *stemma*, which, like its original Greek cognate (στέμμα), often refers to a garland or wreath (see Acts 14:13). From this meaning, the word eventually came to refer to family trees. From there it was extended to refer to manuscript relations as well. Within the CBGM, there are three types of stemmata that need to be understood. The first type relates individual variants; the second two types relate whole texts or witnesses. The three types are, respectively, a local stemma, a substemma, and the global stemma.

2.4.1. Local Stemma

The first type of stemma in the CBGM is the simplest and most important insofar as the other two build upon it. This first type is called a local stemma, and it relates the variants at a single place or location (hence *local*) of variation. It is these stemmata that also form the basis for genealogical coherence, since these are how the editors record their own editorial

which must be wrong, given the absolute numbers in the other columns. The discrepancy is due to changes in the initial text between the two editions of the ECM IV (personal communication with Gerd Mink) and has been corrected here.

decisions across thousands of places of variation. At their simplest, local stemmata connect just two variants. In Jas 2:23, for example, the best-attested text reads that "Abraham believed God, and it was reckoned to him for righteousness, and he was called a *friend* [φίλος] of God." A small minority of minuscules, perhaps under the influence of the Old Testament (Exod 32:13; Deut 9:27; 1 Chr 16:13), have it that Abraham was called a "servant" (δοῦλος) of God. Since Abraham is never called a "friend" (φίλος) of God in the Old Testament (hence the harder reading), and since this reading has such substantial and early support, the editors determined that it was the initial reading from which "servant" (δοῦλος) derived. The local stemma at this point was drawn as shown in figure 2.3.

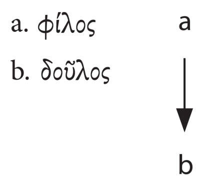


Fig. 2.3. The local stemma for Jas 2:23/36

What is important about this stemma is that the computer keeps track of all the witnesses that attest to reading *a* (φίλος) and reading *b* (δοῦλος). In doing so, the computer also records one instance of *a* → *b* for use in genealogical coherence.

Where there are more variants, the local stemma becomes more complicated. At the end of 1 Pet 5:10, for example, the readers are encouraged in their suffering because eventually God will "restore, confirm, strengthen, and establish" (καταρτίσει, στηρίξει, σθενώσει, θεμελιώσει) them. The form of the verbs, their order, and the presence or absence of the pronoun ὑμᾶς (or ἡμᾶς) are all variously attested, leading to a total of twenty-one variant readings! The local stemma reflects this complexity (see fig. 2.4).

This stemma illustrates several additional features of a local stemma for us. The first is that the source of variant(s) may be left undecided, indicated by a question mark. This is the case with readings *b*, *g*, *o*, and *s!*. The editors could not decide (or could not agree on) how they developed and so left it open. Second, there are several exclamation marks to indicate readings that the editors combined. In this case, reading *m* agrees completely with reading *h* except in spelling στηρίξει as στηρίξοι. In this, *m* was taken as intended to be *h*, and the two were subsequently treated as the same reading in the CBGM even though they are distinguished in the ECM.

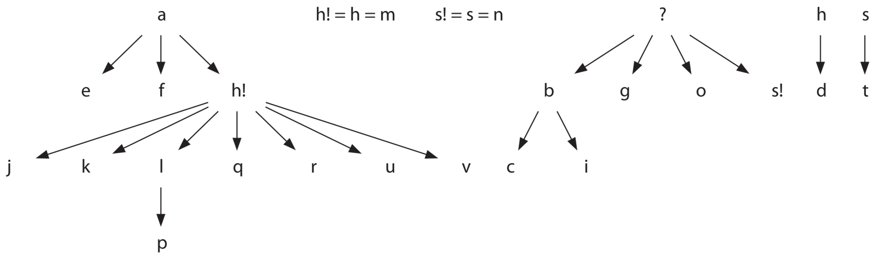


Fig. 2.4. The local stemma for 1 Pet 5:10/38–44

It is important to stress that the construction of these local stemmata involves the traditional tools of textual criticism. The computer never makes the decision for the user, not even when it offers additional data in the form of coherence. In this, the CBGM has been said to be a metamethod, one that can be used by anyone willing to relate variants to each other. That, of course, is something all text critics do by definition.

2.4.2. Substemma

The second type of stemma in the CBGM is known as a substemma. The basic purpose of a substemma is to determine the minimal number of ancestors for a given witness in a given book or corpus. From such substemmata, the construction of the global stemma follows immediately. A substemma is simply one that relates any one witness to its ancestors. When visualized, it also offers a hint to contamination, as shown in figure 2.5.

To understand the construction of substemmata, we should first point out an important distinction in the CBGM between *potential* ancestors and *stemmatic* ancestors. Following Occam's razor, the CBGM is interested in relating witnesses to each other in the simplest way possible. Because

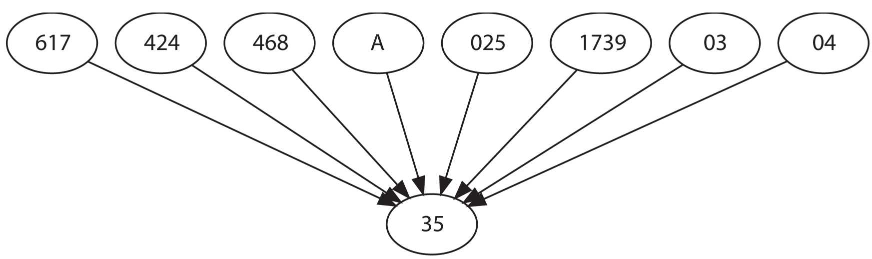


Fig. 2.5. A substemma for witness 35 showing its potential ancestors

fewer ancestors is considered simpler, the goal is to reduce the number needed to the minimum. In this way, any given witness in the CBGM may have dozens of potential ancestors but only a few stemmatic ancestors. We saw already that 03 is a potential ancestor for 01 because 03 has the higher ratio of prior readings in relation to 01. But 03 is hardly the only potential ancestor for 01. In fact, there are 120 in all. Obviously, a genealogy that included all 120 of these for 01 would be comprehensive but not very helpful. So, the CBGM tries to eliminate as many of these as possible so that only the necessary ancestors are left. Those that remain are known as stemmatic ancestors.

The process of finding stemmatic ancestors is time-intensive and has not yet been completed for either Acts or the Catholic Letters, but we can illustrate it briefly here using witness 35. This witness has eight potential ancestors in the Catholic Letters.[30] The question is whether all eight of these are really necessary to explain the text of 35. To determine this, the computer first provides a list of all the possible *sets of ancestors*. This is then filtered to show only the optimal sets, that is, the ones that explain the most readings in 35. The number of possible substemmata for 35 is large: 255.[31] From here, the editor determines the "best of the best" by identifying ancestors that can be eliminated without significant loss. We will consider this process more in chapter 5. In the case of 35, the resulting substemma is shown in figure 2.6.

This stemma means that the text of 35 is best explained using these four close potential ancestors. Thus, each of these four is now a *stemmatic* ancestor for 35, one that is needed in the global stemma. If any of these ancestors were left out, at some point there would be a local stemma that would not fit with the relations in the global stemma. In that case, it would not be global; it would not accurately represent all the editors' decisions.

2.4.3. Global Stemma

Once the nature of an optimal substemma is understood, the nature of the global stemma is simple. The global stemma is nothing more than

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30. For this example, we have had to use data from the first version of the CBGM rather than the second. In the second version, 35 has eleven potential ancestors.

31. The formula for determining how many possible sets of ancestors a witness has is $2^n - 1$, where n is the number of potential ancestors. For 35, $2^8 - 1 = 255$.

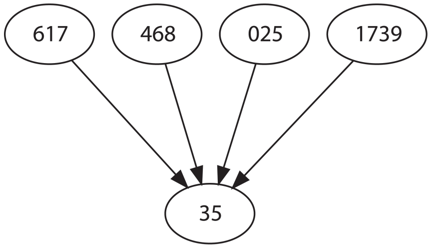


Fig. 2.6. The best substemmata for witness 35, showing only stemmatic ancestors

the combination of all available optimal substemmata. As noted, there is not yet a complete global stemma for any portion of the New Testament. What we do have are select portions. A version of the top part of the global stemma for the Catholic Letters, for example, is shown in figure 2.7.

From this we can see a dramatic representation of the level of contamination. The gray, dashed lines show relationships that may be superfluous. In fact, in the case of 35, 424 and 04 are superfluous, according to Mink.[32] Black lines show more necessary ancestors, with thicker black lines showing the most necessary. The dashed line between 025 and 468 indicates that the direction of influence is equally balanced. Importantly, this is not a representation of how the manuscripts themselves relate in the history of transmission. It is beyond belief that manuscript 617, for example, was copied from four or five different exemplars. Rather, what this represents is one hypothesis (the simplest) about how the *texts* of these manuscripts relate to each other based on the editors' own decisions. In reality, there must be many missing links that, if we had them, would fill out the picture.

We might think of the global stemma a bit like a subway map which simplifies a much more complex set of relations. What we lose in accuracy, we gain in clarity and direction. Like a subway map, the key to the global stemma's value lies in knowing how to use it. We will explore that question in greater detail in chapter 5. For now, it is enough to know that this stemma is the final one that shows us the overall results of the editors' own decisions in *all* the local stemmata.

32. Mink, "Introductory Presentation," 525–60.

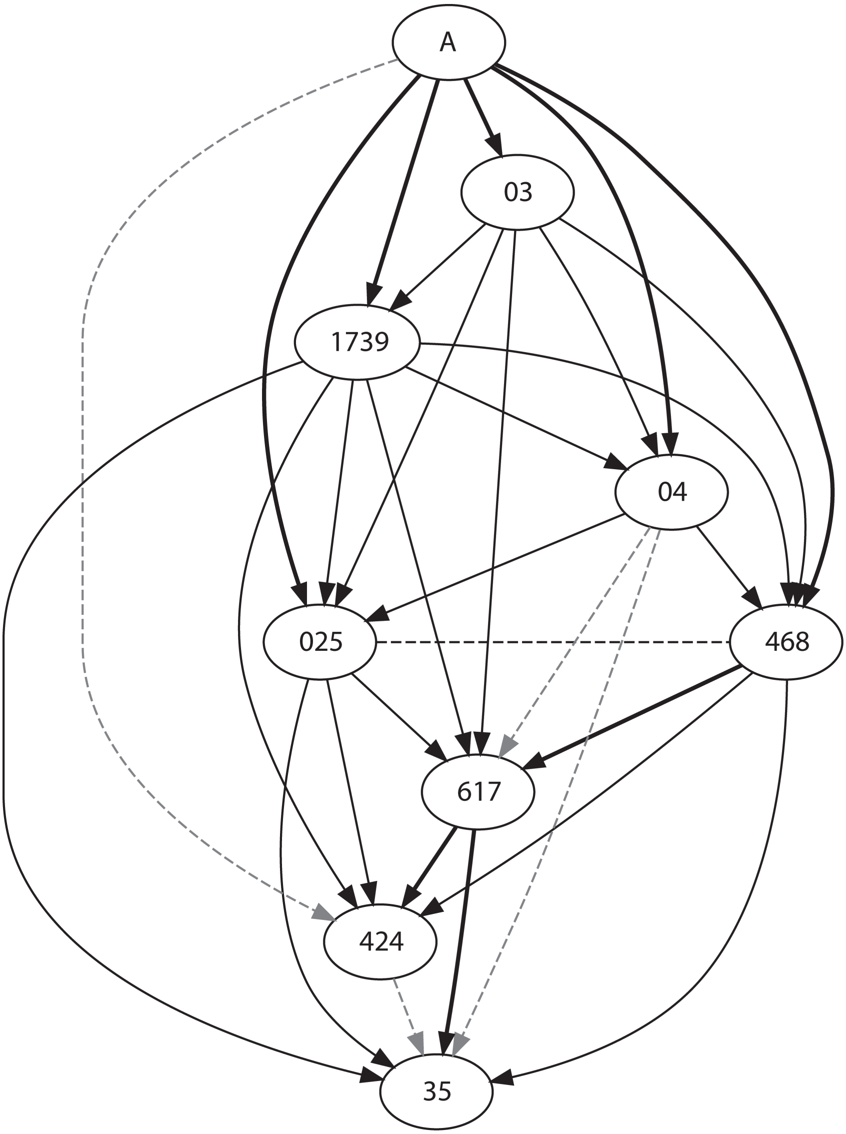


Fig. 2.7. The topmost portion of the global stemma for the Catholic Letters. The *A* witness is the editors' own reconstructed text (*Ausgangstext*)

2.5. Conclusion

In this chapter we have traced how the CBGM developed in tandem with the ECM to become one of its defining characteristics and an indispensable tool for the editors. From the time of the second edition of the ECM, the CBGM reached a state of maturity that warrants careful attention from students and scholars of the Greek New Testament. Following this, we considered three main problems the method was designed to address: contamination, coincidental agreement, and editorial inconsistency. The last two sections then considered key aspects of the method, including the nature of coherence (both pregenealogical and genealogical) and the three types of stemmata (local, sub-, and global). With these conceptual hooks in place, it is time to hang some practical examples on them. The next chapter will show how pregenealogical coherence provides new evidence for assessing textual variants, using examples from the gospels.

2.6. Key Terms

- coherence: pregenealogical and genealogical
- coincidental agreement
- contamination
- ECM
- hypearchetype
- INTF
- Karl Lachmann
- stemmata: local, sub-, and global

3
Pregenealogical Coherence

This chapter introduces pregenealogical coherence, showing what it is and how it is used to make textual decisions. In a pattern that will be repeated in the following two chapters, we give step-by-step instructions that take you through helpful examples. We end with some limitations that need to be kept in mind when using it.

The last chapter's overview of the CBGM touched only briefly on coherence, the method's most important concept. The next two chapters explain in more detail what coherence is and how it works in practice. This chapter focuses on pregenealogical coherence and the next on genealogical coherence. These two chapters form the heart of the book, as they show how to use the CBGM for solving textual problems. Learning to use coherence, like so much of textual criticism, takes practice, and we hope to show that the payoff can be worth the effort.

3.1. The Basic Concept

As explained in the last chapter, pregenealogical coherence refers to *the agreement between witnesses expressed as a percentage of all the places where they were compared*. If witnesses *A* and *B* agree at 85 of 100 such places, then their pregenealogical coherence is said to be 85 percent. By comparing the agreement between multiple pairs of witnesses, we can also speak of the pregenealogical coherence of a group of witnesses. Since the work of comparing manuscripts requires significant labor, not all manuscripts are compared in all places. A preliminary step is therefore taken in order to identify those manuscripts that deserve closer examination and are to be included in the ECM. This step works from a selection of test passages (*Teststellen*) where nearly all Greek continuous manuscripts are collated

for each book. The results have been published in the *Text und Textwert* (*TuT*) volumes over the last forty years.[1]

In Acts, for example, 550 Greek manuscripts were collated in 104 test passages in *TuT*. From these, 183 were included in the ECM, resulting in 7,446 variation units.[2] In the Catholic Letters, 552 manuscripts were initially compared in 98 test passages; from these, 204 have been compared across 3,046 places for the CBGM wherever they were extant (123 were extant across the Catholic Letters).[3] For the rest of the New Testament (except Revelation), the *TuT* volumes provide 920 places where nearly all our continuous text Greek manuscripts are compared. We will use these data in this chapter to give examples from the gospels. The next chapter will use examples from Acts and the Catholic Letters. In the present chapter, we will use an additional resource, the online data from a special volume of the ECM that includes 159 manuscripts at 1,405 places across fourteen parallel pericopes.[4]

Using these data sets, we can study how similar just about any two manuscripts are to each other, textually speaking. This agreement, or pregenealogical coherence, can be applied to specific points of variation. In this way, we can infer the most likely relationships between *variants* by examining the most likely relationships of the *witnesses* that attest them. For pregenealogical coherence, we do this by studying how high the level of agreement is among witnesses. Before explaining how that works, we need to consider what "counts" in terms of the agreements that constitute pregenealogical coherence.

3.1.1. All Variants Except Spelling Differences Count

The first feature of pregenealogical coherence is that it counts nearly all agreements between witnesses. The only variant readings left out are scribal

1. Kurt Aland et al., eds., *Text und Textwert der griechischen Handschriften des Neuen Testaments*, ANTF (Berlin: de Gruyter, 1987–). The volume on Revelation was just published.

2. *TuT* III/1, 2; ECM III/1, 28*.

3. See *TuT* I/1, 2–14; ECM IV^2/2, 8–9. The number of variant passages decreased to 3,043 in a later revision (CBGM 2.0). For the total number of compared manuscripts cited for each book, see 26 n. 21, above.

4. ECMPP, 5*; see the online guide at http://intf.uni-muenster.de/TT_PP/PP_Guide.html.

corrections and most spelling differences.[5] All other readings, including so-called nonsense readings, are included. Nonsense readings are those that make neither logical or grammatical sense to the editors. Importantly, they are treated somewhat differently than other readings in the CBGM. Whenever the editors think they know what the scribe meant to write, it *counts* as the intended reading. For example, at 1 John 1:9, the sixteenth-century scribe of minuscule 1844 mistakenly wrote δικαιδικαιος when he must have meant to write δίκαιος. In this case, 1844 will be counted as if it read δίκαιος.

We mention this because nonsense readings make up a sizeable portion of readings in some collations. Within the ECM of the Catholic Letters, for example, about 20 percent of the 9,290 variants are nonsense readings, most of which (93 percent) are assigned to a "correct" reading.[6] This is an example of how pregenealogical coherence, while not new in its basic principle of comparing manuscripts to each other, is innovative in terms of how much of those manuscripts it compares. Previously scholars worked with far smaller sets of data when trying to relate the text of manuscripts. Sometimes this was by design, but just as often it was by necessity, since keeping careful track of such a large amount of data was nearly impossible before computers.

3.1.2. All Variants Count Alike

If pregenealogical coherence counts more agreements, it also counts all these agreements equally. This means that an eighteen-word agreement at the end of 1 John 5:7 about the Trinity (*ἐν τῷ οὐρανῷ ὁ πατὴρ καὶ ὁ λόγος, καὶ τὸ ἅγιον πνεῦμα καὶ οὗτοι οἱ τρεῖς ἕν εἰσι*) counts just as much as a single-word agreement (οἱ) at the beginning of the same verse.[7] Both count as one agreement out of several thousand for the Catholic Letters. The fact that one has had a tumultuous theological history and one is hardly ever

5. See Mink, "Contamination, Coherence, and Coincidence," 143.

6. For a detailed discussion of this issue and the larger question of what variants are counted in the CBGM, see Gurry, *Critical Examination*, ch. 6.

7. Humans must decide where to draw the boundaries within which manuscripts are compared, and this can affect the overall levels of pregenealogical coherence. However, with thousands of places of comparison to be determined, it is hard to image how bias could realistically privilege any one manuscript over another.

noticed makes no difference here; pregenealogical coherence counts them the same.

This does not mean, however, that the CBGM counts variant agreements without ever weighing them. Quite the opposite, in fact. Variants in the CBGM, as we saw in the last chapter, are evaluated for how likely they are to connect witnesses that share them, that is, for their connectivity. Connectivity is thus a measure of how genealogically significant an agreement is. This will become much more important in the next chapter when we discuss genealogical coherence. For *pre*genealogical coherence, the focus of this chapter, all agreements are counted the same.

As it is, the fact that pregenealogical coherence does not weigh agreements differently depending on their genealogical significance is actually its strength. This is because it is untouched by our subjective judgments about which variants are important and which are not. Since scholars will disagree about how important any given variant is or how any two variants relate to each other, pregenealogical coherence has the potential to break the impasse when text-critical judgments clash. That, as we will see, is precisely its promise in our example from Mark 1:1 below.

3.1.3. It Does Not Count Places Where All Witnesses Agree

Finally, pregenealogical coherence does not count places where there is no variation at all among the collated witnesses. In other words, where all manuscripts agree, their agreement is not counted. The reason is because these places tell us nothing we do not already know about our manuscripts, namely, that they are all related to each other *somehow*. Obviously, If they were not related at all, we would not be studying them as New Testament manuscripts.[8] What we want to know is not *that* they are related but *how*, specifically, they are related. To give a human illustration, knowing a family's surname generally tells us that the family members are related, but it does not help us distinguish mother from daughter or father from uncle or grandfather from grandson. For that, we need to be able to group specific members by the differences they share within the context of their larger similarity (same surname). Therefore,

8. It is not always appreciated that the very identification of a manuscript as a New Testament manuscript already puts it in relationship with all other New Testament manuscripts.

pregenealogical coherence only counts agreements at places where there is disagreement in the tradition.

This seemingly obvious fact needs to be mentioned because it reminds us that agreement levels in the CBGM are *always relative*. If we compare only two manuscripts and they disagree at only two places, the CBGM ascribes them a pregenealogical coherence of 0 percent. If a third witness is added that disagrees with the previous two at ninety-eight new places, the pregenealogical coherence of the first two jumps to 98 percent (98 out of 100 places of comparison).

There are two important implications to this. First, it means that, in general, the more witnesses included in the CBGM, the higher the pregenealogical coherence percentages will be overall.[9] Second, it means that we need to keep two important reference points in view when we judge pregenealogical coherence as higher or lower, which is to say, stronger or weaker: (1) the general level of agreement between all witnesses of a particular book or corpus and (2) the typical level of agreement any particular witness has with its closest relatives. In the latter case, a 90 percent agreement would be low for most Byzantine witnesses but high for Codex Sinaiticus. For the Catholic Letters, the highest level of agreement between any two witnesses is 99.1 percent (shared by 614 and 2412); the lowest is 77.8 percent (1241 and 1838). The average between all possible pairs of witnesses is 87.5 percent, with the median close behind at 87.3 percent.[10] Comparing Codex Sinaiticus (01) and Codex Vaticanus (03), we find that their 87.1 percent agreement is just below average. Despite this, 03 is still the closest relative of 01 in the Catholic Letters. In other words, a below-average level of pregenealogical coherence is actually quite good in the case of 01 and 03. This illustrates the importance of keeping *both* our ref-

9. We say "in general" because at a certain point adding a great many highly similar witnesses does not add a great many new places of variation in which to compare them. For the negligible difference the editors found by including an extra forty-one manuscripts for James, see Mink, "Contamination, Coherence, and Coincidence," 147.

10. These numbers are from Gerd Mink, "Guide to 'Genealogical Queries' (Version 2.0)," §d, http://intf.uni-muenster.de/cbgm2/guide_en.html. They differ slightly from those given in his "Introductory Presentation," 280 (http://www.uni-muenster.de/INTF/cbgm_presentation/). The median, it will be remembered, is the middle point in the whole set of numbers, whereas the average is the sum of all agreement levels divided by the total number of them.

erence points in view when evaluating pregenealogical coherence in any given case. A given pregenealogical coherence percentage may be strong in one case but much weaker in another.

3.2. How to Use Pregenealogical Coherence

If this is what pregenealogical coherence is, how can it be useful for making text-critical judgments? In what follows we will proceed step by step through two examples that show its value for deciding between variants. For both examples, we will employ the online tools from INTF known as Manuscript Clusters. These have been available for several years, although they have largely gone unnoticed by New Testament scholars. Available online at http://intf.uni-muenster.de/TT_PP, they followed the 2011 publication of a special volume of the ECM covering fourteen parallel pericopes in the gospels (ECMPP).

This website includes three different ways to study coherence in the gospels, one using the *TuT* data and two using data from the special ECM volume on parallel pericopes. We will explain all three in our examples. We should note that the *TuT* data should be used with caution. The reason is that, although the *TuT* includes far more manuscripts, it compares them in far fewer places.[11] Specifically, it compares around 2,200 manuscripts of the four gospels in 467 places;[12] the parallel pericopes volume compares only 159 manuscripts but does so across 1,405 places where they are extant. In our example from Mark 1:1, we will use the *TuT* data only when necessary to fill in gaps in the ECM data. For Matt 16:27, we will use only the ECM data.

There are four basic steps in the process of using these tools:

1. Pick a variation to study.
2. List the Greek witnesses for each of the main variant readings.
3. Look up each witness's closest relatives to see whether they share the same reading; the fewer that do, the weaker the coherence.

11. Mink is even more cautious, saying that *TuT* should *never* be used to study pregenealogical coherence because its sample size is too small ("Contamination, Coherence, and Coincidence," 145–46).

12. The totals are: 64 places in Matthew, 196 in Mark, 54 in Luke, and 153 in John 1–10.

4. Combine the results from step 3 to determine the overall coherence for each reading.

What we are looking for is the quality of coherence for each reading. If the witnesses of one reading show weaker coherence, this may indicate either that their reading was copied in multiple lines of transmission or that it was poorly copied. Determining which of these is the best explanation requires us to consider the nature of the variant itself.[13]

Where the variant can be explained as arising from scribal miscopying, we have a good case that scribes created the reading multiple times. This is important because it provides further transcriptional evidence that the reading is secondary. If none of our readings shows weak coherence, then we are simply left to our traditional text-critical criteria.

3.3. Examples

This section leads readers through the process just explained. Although it can be somewhat tedious, the work of tracking the readings of close relatives is more than worth it if it helps resolve longstanding textual problems such as Mark 1:1. For our examples, we have chosen two texts from the gospels, one that has important bearing on Christology and one involving Jesus's teaching on discipleship.

3.3.1. Mark 1:1

No further than the first verse of the First Gospel do we find one of the most difficult and important variants in the gospels.[14] In most manu-

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13. Gordon D. Fee expressed the necessity not only of counting but also weighing textual variation: "It is a truism of our discipline that some agreements in variation by their very nature are just as likely to be the result of independent scribal activity as others are almost impossible to explain apart from some kind of dependence on exemplars from the same family or text-type" ("On the Types, Classification, and Presentation of Textual Variation," in Eldon Jay Epp and Gordon D. Fee, *Studies in the Theory and Method of New Testament Textual Criticism*, SD 45 [Grand Rapids: Eerdmans, 1993], 67).

14. This example is based on the argument found in Tommy Wasserman, "Historical and Philological Correlations and the CBGM as Applied to Mark 1:1," *TC* 20 (2015), http://purl.org/tc/v20/TC-2015-CBGM-Wasserman.pdf.

scripts, this gospel begins with the words *ἀρχὴ τοῦ εὐαγγελίου Ἰησοῦ Χριστοῦ υἱοῦ θεοῦ*: “the beginning of the gospel of Jesus Christ, *the Son of God*.” Some manuscripts lack the last two words in Greek, “Son of God,” a christologically rich title in Mark’s account (see 1:11; 15:39). The main question is whether an early scribe accidentally omitted “Son of God” (υἱοῦ θεοῦ) or expanded the divine name, whether read as the title of the book or not. When written in majuscule with *nomina sacra* (abbreviated forms)—ΑΡΧΗ ΤΟΥ ΕΥΑΓΓΕΛΙΟΥ Ι̅Υ̅ Χ̅Υ̅ Υ̅Υ̅ Θ̅Υ̅—it is obvious how a scribe could have omitted the last two words by tripping over the *upsilon*s (a haplography). On the other hand, there is ample evidence in the gospels of scribes expanding the titles of Jesus, whether out of reverence or habit.[15]

The difficulty of the decision is evident in our modern critical editions. The disputed words are omitted in the SBLGNT, enclosed in square brackets in the UBS[5]/NA[28], and included in the THGNT. In contrast, most modern translations and commentators include the words. Because of the variant’s theological and interpretive significance, it makes a good example of how pregenealogical coherence can provide new evidence to address longstanding textual problems.[16] For this example, we will use the Parallel Pericopes Manuscripts Clusters and the T&T Manuscript Clusters tools with their default settings.[17]

Using these Manuscript Clusters tools is as simple as knowing which manuscript you want to look up. Once you enter the manuscript number (numbers are used rather than letters) and click GO! (see fig. 3.1), the software produces a list of the closest relatives for that witness ranked from high to low by their level of pregenealogical coherence.

For 01, the computer returns the results shown in figure 3.2. The first result, highlighted in bold, tells us how closely our manuscript (01) agrees with the Majority Text (MT). The definition of the Majority Text for this

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15. However, there is to our knowledge no clear-cut example of the addition of “Son of God” in the manuscript tradition, except the harmonization in Mark 8:29, where scribes already had an “excuse” to supplement the text on the basis of a parallel.

16. For studies that come to opposite conclusions using traditional criteria, see (for the longer reading) Tommy Wasserman, “The ‘Son of God’ Was in the Beginning (Mark 1:1),” *JTS* 62 (2011): 20–50; and (for the shorter reading) Peter M. Head, “A Text-Critical Study of Mark 1.1: ‘The Beginning of the Gospel of Jesus Christ,’ ” *NTS* 37 (1991): 621–29.

17. The various settings are explained in the guides for each tool online.

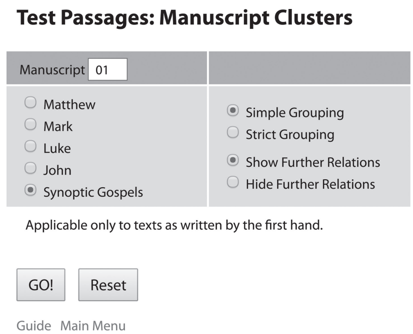


Fig. 3.1. The Parallel Pericopes: Manuscript Clusters tool showing the default settings

01, Simple Grouping, Showing Further Relations, Basis: PP Apparatus of Mt-Mk-Lk

01 - MT 78.0%
1) A (87.9)
2) 03 (84.9)
3) 019 (84.8)
4) 892 (84.2)
5) 04 (82.3) - 150 (86.7)
6) 33 (81.9) - 022 (83.7)
7) 1342 (81.3)
8) 1582 (80.2) - 205 (94.3)
9) 033 (80.0)
10) 037 (79.6) - 045 (88.7)

Fig. 3.2. Closest relatives for Manuscript 01, Sinaiticus

particular tool is based on the results of the *TuT* collations that resulted in a selection of manuscripts representing the Majority Text.[18] Sinaiticus agrees 78 percent of the time with the majority. This percentage is important because it serves as the cutoff for the rest of the results. A manuscript that agrees with 01 at less than 78 percent is not shown in the results. The reason is that any relationship less than the majority agreement is considered insignificant. Whether this is true in every case is debatable, but this is how the current tool works. For 01, the resulting list of close relatives extends to forty-one witnesses (we list only the top ten). The rest of 01's relatives are not deemed closely related because they agree with it at less than 78 percent.

18. For details concerning the identification of majority readings in the test passages, see ECMPP, 8*.

Sinaiticus's closest relative is *A*, the editor's reconstructed text (i.e., the NA^{28}/UBS^{5} text). These two agree at 87.9 percent.[19] Next in line is 03, with 84.9 percent, and so on. The fifth-ranked relationship is 04, and here we see a second witness listed after the dash: 150 (86.7). This alerts us to the fact that there is another witness that is closer to 04 than 04 is to 01. In this case, minuscule 150 agrees with 04 at a higher rate, 86.7 percent. Where no second witness is listed, we can assume that 01 is the closest relative. Thus, 01 is the closest relative to 03, 019, 892, 1342, and 033. In CBGM terms, these witnesses all have their highest level of pregenealogical coherence with 01 and vice versa.

Now that we know how to interpret the results, we can apply them to our variant in Mark 1:1. To do this, we need to go witness by witness and record the closest relative that shares the same reading. The Greek manuscripts we need to check are as follows:[20]

a. Ἀρχὴ τοῦ εὐαγγελίου Ἰησοῦ Χριστοῦ (τοῦ) υἱοῦ (τοῦ) θεοῦ – 01^{1} 02 03 05 019 032 037 f^{1} (= 1 118 131 209 1582 et al.) f^{13} (= 13 69 124 174 230 346 543 et al.) 33 565 579 582^{c} 820^{c} 1555^{c} Byz
b. Ἀρχὴ τοῦ εὐαγγελίου Ἰησοῦ Χριστοῦ – 01* 038 28^{c} 530 582* 820* 1021 1436 1555* 1692 2430 2533

Our task is to *check each of these witnesses* in the Manuscript Clusters tool and mark the closest relatives that have each reading. In some cases, the data from the ECM return no close relatives. This is because it only includes 159 manuscripts, and some of our witnesses are therefore not included. In these cases, we will expand our search by using the *TuT* data (which includes some 2,200 manuscripts), remembering that it compares them in far fewer places. In some cases, even this expanded search will leave us without any close relatives that share the same reading. This is important to note, as it affects the overall coherence we are studying. For Mark 1:1, we can list the closest relative of each witness in table form. For the witnesses that have reading *a*, their closest relatives are shown in table 3.1 (01^{1} designates the corrected text of Sinaiticus and 01* in fig. 3.2 des-

19. Unfortunately, the cluster tools do not provide the absolute figures behind its percentages. This is a difference with the CBGM software for Acts and the Catholic Letters.

20. The apparatus is based on NA^{28} and the fuller apparatus in Wasserman, "Son of God," 22.

ignates the reading of the first hand; for corrected minuscules the raised letter *c* is used instead).

Table 3.1. The pregenealogical coherence of the closest relatives to witnesses with reading *a* at Mark 1:1

Witness with Reading *a*	Closest Relative with *a*	Rank (% Agreement)	Closest Relative with *b*	Rank (% Agreement)
01[1]	A	1 (87.9)	038	40 (78.0)
02	041	1 (93.9)	1436	263 (86.3)
03	01*	3 (84.9)	892	2 (85.5)
05	2737	4 (71.1)	038	3 (71.6)
019	892	1 (88.0)	01	4 (84.8)
032	735	1 (86.2)	530	81 (57.3)
037	1341	1 (89.1)	530	161 (64.8)
1	1582	1 (99.4)	–	–
118	209	1 (95.4)	–	–
131	304	1 (88.3)	–	–
209	205	1 (98.5)	–	–
1582	1	1 (99.4)	–	–
13	826	1 (97.7)	–	–
69	826	1 (94.8)	–	–
124	826	1 (92.3)	–	–
174	2389	4 (92.2)	–	–
230	84	1 (97.4)	–	–
346	826	1 (95.8)	–	–
543	826	1 (98.7)	–	–
33	892	1 (85.4)	1436	157 (63.8)
579	33	2 (82.1)	1436	54 (65.6)
582[c]	2492	1 (97.0)	–	–
820[c]	684	2 (99.7)	–	–
1555[c]	2586	1 (94.5)	–	–
Byz	–	–	–	–
Average	**–**	**1.4 (92.1)**	**–**	**85 (73.1)**

Starting at the second row, we see that the first close relative of 02 to share reading *a* is 041. This also happens to be 02's closest relative, with a rank of 1 and a pregenealogical coherence of 93.9 percent. The closest relative to 02 with reading *b* is much further down the list. Witness 1436 is ranked 263rd and has a pregenealogical coherence with 02 of only 86.3 percent. This is an extremely low coherence. Where no close relative is found, the table records this with a dash. The last row in the table is the remaining Byzantine witnesses (Byz). We have not checked these because we can assume that they all share highly similar witnesses with the same reading, since this group is, by its very definition, highly coherent.

In interpreting these results, the most important feature is the difference between the average of column 3 and the average of column 5. On average, witnesses of reading *a* have a close relative ranked just above first (1.4), whereas their closest relatives with reading *b* average a rank of eighty-fifth. In terms of the quality of coherence, this is about as good as it gets and suggests that reading *a* was very well copied. What, then, of the coherence for reading *b*? The results for these witnesses are given in table 3.2 (asterisks after certain witnesses designate the text of the first hand before it was corrected).

In this case, we see that many witnesses of the shorter reading have no close relatives with the same reading. The average rank is almost fifty-ninth, which is markedly higher than what we saw with witnesses of the longer reading. On the other hand, every one of these same witnesses has a very close relative with reading *a*. Only 01* has to look further than its first-ranked relative. In contrast to reading *a*, then, the witnesses of reading *b* show much weaker pregenealogical coherence.

So, we have a case where one reading has nearly perfect coherence and the other has much weaker coherence. The question is what to make of this. Without the benefit of pregenealogical coherence, scholars such as Jan Slomp, Peter Head, Bart Ehrman, and Adela Yarbro Collins have pointed to the unlikelihood of an accidental omission in the opening words of a work (in this case even involving *nomina sacra*).[21] Instead, they suggest

21. Jan Slomp, "Are the Words 'Son of God' in Mark 1.1 Original?," *BT* 28 (1977): 148; Head, "Text-Critical Study," 629; Bart D. Ehrman, "The Text of Mark in the Hands of the Orthodox," *LQ* 5 (1991): 150; Ehrman, *The Orthodox Corruption of Scripture: The Effect of Early Christological Controversies on the Text of the New Testament*, 2nd ed. (Oxford: Oxford University Press, 2011), 86. The argument is also decisive for Adela Yarbro Collins: "The reading ['Son of God'] … is most

Table 3.2. The pregenealogical coherence of the closest relatives to witnesses with reading *b* at Mark 1:1

Witness with Reading *b*	Closest Relative with *b*	Rank (% Agreement)	Closest Relative with *a*	Rank (% Agreement)
01*	038	40 (78.0)	03	2 (84.9)
038	28	58 (49.3)	565	1 (85.1)
28c	1436	71 (72.4)	2175	1 (81.8)
530	–	–	1080	1 (97.4)
582*	–	–	2492	1 (97.0)
820*	–	–	749	1 (100)
1021	–	–	2282	1 (93.9)
1436	–	–	2782	1 (97.9)
1555*	–	–	2586	1 (94.5)
1692	1436	66 (90.5)	84	1 (92.9)
2430	–	–	2782	1 (97.2)
2533	–	–	2451	1 (94.5)
Average	**–**	**58.8 (72.6)**	**–**	**1.1 (93.1)**

that the divine name was expanded at some point. For Bart Ehrman, for example, the expansion is a major example of an "orthodox corruption" intended to circumvent an adoptionist reading of Jesus's baptism. In this, scribes made "a slight modification of Mark's opening words, so that now they affirm Jesus' status as the Son of God prior to his baptism."[22] In this scenario, the longer reading is not only secondary, but it is designed to rid the text of a theological problem.

Ehrman does not think it is possible to explain the shorter reading as an accident:

> For then the omission would have had to have been made independently by several scribes, in precisely the same way. The explanation is rendered yet more difficult by the circumstance that the same error, so far as our

likely secondary, because an accidental omission in the opening words of a work is unlikely" (*Mark: A Commentary*, Hermeneia [Minneapolis: Fortress, 2007], 130).

22. Ehrman, *Orthodox Corruption*, 88.

> evidence suggests, was not made by later scribes of the Byzantine tradition, many of whom are not known for their overly scrupulous habits of transcription.[23]

From the evidence presented above, we may now turn this argument on its head. The pregenealogical coherence suggests that the *shorter* reading, in contrast to the longer reading, was the one not well transmitted. Either the shorter reading was copied in various isolated streams of the larger tradition, or it was created multiple times from witnesses with the longer reading. In the case of the Byzantine witnesses with the shorter reading, the latter explanation is almost certainly the case (note also that 582 and 820 have been corrected). Paradoxically, then, these witnesses to the short reading are in fact witnesses against it, considering transcriptional probability based on pregenealogical evidence.

The question is whether the four non-Byzantine witnesses of reading *b* (01* 038 28^{c} 1555*) are also derived from reading *a*. Minuscule 1555 is a mixed witness, close to the Byzantine majority; consequently, it has hundreds of close relatives with reading *a*. In addition, it has been corrected in Mark 1:1. The other three witnesses are distant from each other, and all their closest relatives attest to reading *a*. Two of them have been corrected. On the other hand, their top-ranked closest potential ancestors are not as close—the extant manuscript tradition is not as rich for these stages of texts, so the results are somewhat less certain for these three witnesses.

Nevertheless, we can see that the witnesses of the shorter reading show weaker coherence, and this reflects coincidental agreement, otherwise known as multiple emergence of the reading. This, *when combined with the nature of the reading itself*, points to it being secondary. In sum, the pregenealogical coherence for each reading suggests that we should prefer the longer reading as the initial text of Mark's Gospel. This, in turn, means that Mark intended his readers to start his gospel with a view of Jesus as "the Son of God."

3.3.2. Matthew 16.27

For our second example, we turn to another textual variant in the gospels, this one involving Jesus's most famous teaching on discipleship, found in Matt 16:24–28, Mark 8:34–9:1, and Luke 9:23–27. The paradoxical state-

23. Ibid., 86.

ment that the way to find one's life is to lose it for the sake of Jesus is immediately followed in all three accounts with a warning about Jesus's coming "in the glory of his Father with his angels," a reference to his authority to judge. Unique to Matthew's account, however, is the addition of a scriptural clarification that, when Jesus does this, he will "repay each one according to his action" (*ἀποδώσει ἑκάστῳ κατὰ τὴν πρᾶξιν αὐτοῦ*). This is clearly a reference to either Ps 62:12 (LXX 61:13) or Prov 24:12. Differences from the Septuagint are (1) the form of the verb and (2) the standard of judgment, which is *τὰ ἔργα* in both Old Testament references (cf. Rom 2:6).

Not surprisingly, we find a variant at just this point. Some important witnesses (including 01, f^1, Latin, Syriac, and Coptic) read the plural *τὰ ἔργα* ("works") in agreement with the typical use in the Septuagint (Pss 27:4; 61:13; Prov 24:12; Jer 27:29; Lam 3:64; Sir 16:12, 13; cf. Pss. Sol. 2:16, 34; 17:8). Most witnesses, however, have the singular *τὴν πρᾶξιν* ("action"), which is found only here. The singular is found in the bulk of Byzantine witnesses. Certainly, both external and internal evidence here favor the singular as the initial text, since it is difficult to explain otherwise, whereas the plural may easily reflect a harmonization to the LXX.

A look at the pregenealogical coherence confirms this explanation even as it provides a good illustration of how to use it. To do that, we first need to list the main Greek witnesses for each reading.[24]

a. *κατὰ τὴν πρᾶξιν αὐτοῦ* – 01C2 03 04 05 019 032 037 038 042 043 0211 13 33 118 124 157 176 205 209 222 346 372 543 565 579 700 713 788 826 827 828 892 983 1009 1071 1093 1241 1273 1279 1342 1446 1457 1500 1593 1661 2193 2542 2737 2766 2786 Byz [09Z 1230A 1344Z]
b. *κατὰ τὰ ἔργα αὐτοῦ* – 01* 09T 1 3 22 28 79 233 517 735 740 792 807 863 954 979Z 1230T 1253 1296 1335 1344T 1424 1555 1579 1582 1675 1780 2372 2411 2680
c. *κατὰ τὴν τάξιν αὐτοῦ* – 31 273f

The third reading is obviously a development of the first and has no serious claim to being the initial text. But we will keep it in mind, as it will

24. 979T and 1336 are missing from this variation unit, since they have larger omissions here and therefore are treated as lacunose.

be a useful illustration in what follows. What is notable about the other two readings is that the majority of the Byzantine tradition has preserved the unharmonized reading (though not unanimously, given the fourteen Byzantine minuscules with reading *b*).[25]

To examine the pregenealogical coherence of the two main readings, we turn again to Manuscript Clusters, but this time, we can use the Parallel Pericopes: Find Relatives software because our variant is listed in the ECM volume on parallel pericopes. The distinctive feature of the Parallel Pericopes: Find Relatives tool is that it eliminates the need to manually check the reading of each close relative. Instead, this is done automatically by listing the reading right after each relative.

The only cost of this massive time savings is the need to supply a bit more information about the variant up front. Instead of entering just a manuscript number, we now need to know the variant "address" from the ECM.[26] Helpfully, these are listed at the top of each variation unit in the ECM, so finding them is easy enough. For our text, the address for reading *b* is "Mt 16.27/44–50b." This unique reference tells the computer that we want to see witnesses with reading *b* at the variation unit that spans words forty-four through fifty at Matt 16:27. As before, we use the default settings and click GO! (see fig. 3.3).

The result is a list of the ten closest relatives for each witness with reading *b*. With some variants, we may need to increase how many close relatives we want to see, but for now ten relatives will do. Each close relative is listed with its percentage agreement just as before, but now we are also given the variant reading for these close relatives.[27] For our search, the software displays the results shown in figure 3.4.

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25. Westcott and Hort's characterization of the Byzantine text as more prone to harmonization has been influential (*Introduction*, 135; see Metzger, *Textual Commentary*, 7). This view has been challenged by W. F. Wisselink, *Assimilation as a Criterion for the Establishment of the Text: A Comparative Study on the Basis of Passages from Matthew, Mark and Luke* (Kampen: Kok, 1989), but has been supported by several studies, the most recent being Cambry Pardee, "Scribal Harmonization in Greek Manuscripts of the Synoptic Gospels from the Second to the Fifth Century" (PhD diss., Loyola University, 2016), 46. For more on the Byzantine text, see ch. 6 below.

26. See the appendix for an introduction to the layout of the ECM.

27. The two numbers before each witness indicate its rank with the Simple and Strict grouping, respectively. However, these numbers only differ when the Strict setting is used. Our thanks to Klaus Wachtel for clarification on this point.

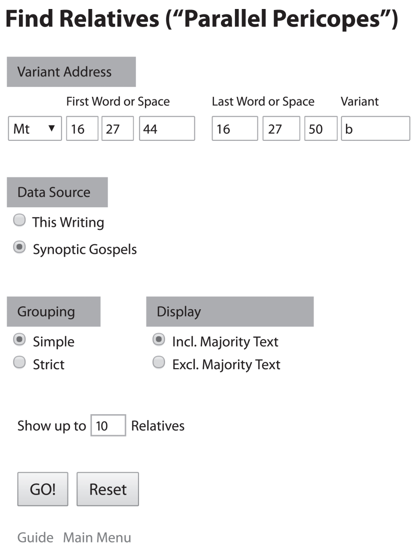


Fig. 3.3. The format for viewing the relatives of those witnesses for reading *b*

Mt 16:27/44-50b
Data Source: Synoptic Gospels, Simple Grouping, Incl.
Majority Text, Up to 10 Close Relatives

01 - MT 78.0%
1 - 1) A - 87.9 - a (M)
2 - 2) 03 - 84.9 - a (M)
3 - 3) 019 - 84.8 - a (M)
4 - 4) 892 - 84.2 - a (M)
5 - 5) 04 - 82.3 - a (M)
6 - 6) 33 - 81.9 - a (M)
7 - 7) 1342 - 81.3 - a (M)
8 - 8) 1582 - 80.2 - b
9 - 9) 033 - 80.0 - a (M)
10 - 10) 037 - 79.6 - a (M)
09 - MT 96.3%
1 - 1) 07 - 97.0 - a (M)
2 - 2) 1341 - 96.8 - a (M)
3 - 3) 031 - 96.4 - a (M)
1 - MT 86.4%
1 - 1) 1582 - 99.4 - b
2 - 2) 209 - 94.7 - a (M)
3 - 3) 205 - 94.1 - a (M)
4 - 4) 2193 - 92.9 - a (M)
5 - 5) 118 - 90.7 - a (M)
6 - 6) 22 - 88.1 - b
3 - MT 98.9%
1 - 1) 1296 - 99.1 - b
22 - MT 96.7%

Fig. 3.4. List of witnesses for reading *b*

At the top of the results is the variant address we searched for and then a list of the search settings. After this is a list of the witnesses to reading *b*. The first is 01*, which agrees with the Majority Text (MT) at 78.0 percent.[28] As previously noted, this percentage becomes the cutoff for the other relationships displayed. Any witnesses that agree with 01 less than 78.0 percent are considered too distantly related to be listed. This explains why we only have three close relatives for 09 despite specifying a display of up to ten. Further down the list we find several witnesses with no close relatives listed (e.g., 22). This is because they agree with the Majority Text more often than with any other witness. In these cases, we are left to assume that their closest relatives agree with the majority of witnesses in this variation (in this case, reading *a*).

What we notice is that almost all the closest relatives of 01 have reading *a*. This is exactly what we are looking for: cases where the closest relatives do not share the same reading. Looking for such cases among all the results will give us a sense of the quality of the coherence among our witnesses. Remember that close relatives with the same reading signals stronger coherence and close relatives with a different reading signals weaker coherence. Since there are over 100 witnesses in this variation unit, we will only list those witnesses whose closest relative *does not share* the same reading.[29] This will show us where coherence is weakest. The results are shown in table 3.3.

From this table, it is quite obvious that the witnesses for readings *b* and *c* have the weaker coherence. This is even more striking when we realize that there are over one hundred witnesses to reading *a*, yet only one of them (032) has its closest relative with a different reading. Even in this case, the second closest relative of 032 is 35, which has reading *a* here and agrees at 84.2 percent. So even here the coherence is not so weak. On the other hand, most of the witnesses to reading *b* show all or almost all of their ten closest relatives with reading *a* here. The same is true of the witnesses of reading *c*. In other words, the coherence for these two is very weak, especially in comparison to reading *a*.

The result is clear confirmation of our original hypothesis. Reading *b* arose as a corruption of reading *a* under the influence of other places

28. The first hand of 01 has reading *b*, but 01C2 has reading *a* here.

29. For witnesses whose closest relative is the MT, we will assume their closest relative has reading *a*, which is the reading of Byz in the ECM.

Table 3.3. Witnesses whose closest relatives do not share the same reading at Matt 16:27/44–50

a Witnesses	Closest Relative	*b* Witnesses	Closest Relative	*c* Witnesses	Closest Relative
032	735 (86.2) *b*	01*	A (87.9) *a*	31	1338 (94.5) *a*
		09	07 (97.0) *a*	273	4 (94.4) *a*
		79	1345 (87.3) *a*		
		740	35 (85.7) *a*		
		792	1334 (84.1) *a*		
		863	732 (88.1) *a*		
		1335	045 (89.2) *a*		
		1344	031 (94.0) *a*		
		1579	184 (94.2) *a*		
		1780	1340 (92.5) *a*		
		2411	041 (96.0) *a*		
		2680	1339 (89.7) *a*		

where the Bible speaks of judgment according to *works* (τὰ ἔργα). In this connection, we may also observe the correction (or additional reading) in 09 and 1344 from reading *b* to reading *a*.[30] Reading *c* is also confirmed to be a development of reading *a*, but given the reading in question, it probably arose due to a simple confusion between similar sounding words (*πρᾶξιν* and *τάξιν*).

What the pregenealogical coherence adds to our hypothesis, besides additional evidence in support of it, is the increased probability that both readings *b* and *c* developed multiple times in transmission. Since the two witnesses of reading *c* are not close relatives, this tells us that at least two scribes probably made the same mistake independently. Likewise, reading *b* must have developed from *a* more than once, and this tells us something about how easy it was for scribes to harmonize uncommon forms to

30. The fact that the corrected reading (or additional reading) is in accordance with the closest relatives is evidence that scribes used source copies that were closely related.

common forms. In both cases, the pregenealogical coherence has helped identify cases of multiple emergence or coincidental agreement. Knowing this can make us more alert to this possibility elsewhere. Most important, while this variant is not particularly difficult or controversial, it does illustrate how well pregenealogical coherence works.

3.4. Limitations

These two examples show how pregenealogical coherence can be a valuable addition to our text-critical toolbox. Its unique contribution is that it tells us how closely related the witnesses of any particular variant are to each other. Where they are not closely related, this may suggest that the variant in question was not faithfully copied across time. Depending on the variant itself, this may indicate that it was created multiple times in the course of transmission, and this signals that it is secondary. Of course, pregenealogical coherence will not help us solve every textual problem. Sometimes, in fact, it may unsettle decisions we thought were resolved. In other cases, the coherence may be equally strong for the variants we are studying, so that it offers little help either way. Still, the benefits it does offer can help, sometimes even providing key evidence for longstanding problems. Precisely because of this potential, it is important to give several further caveats about what pregenealogical coherence cannot do.

3.4.1. It Does Not Tell Us the Direction of Change

At best, pregenealogical coherence only tells us how likely it is that a variant had multiple sources of origin rather than just one. But it does not tell us what those sources are. The fact that it does not tell us about the direction of variant change is hinted at in the name itself (hence the *pre-* in *pregenealogical*). Although this is not the place to change the CBGM's key terms, thinking of this coherence as *nondirected coherence* does a better job of reinforcing the point. Whatever the limits of the current name, the important thing to remember is that pregenealogical coherence cannot tell us which variant led to which. "To answer this question," Mink writes, "requires that the customary text-critical methods be applied."[31] The benefit of pregenealogical coherence is that it provides a largely unbiased

31. Mink, "Contamination, Coherence, and Coincidence," 158.

source of information that can help resolve some variants. These, in turn, become the data for genealogical coherence that we will explore in the next chapter.

3.4.2. It Is Only One Piece of Evidence

The previous point naturally leads to a second limitation, which is that pregenealogical coherence is only one piece of the text-critical puzzle. The other pieces—knowledge of scribal tendencies, the date and quality of manuscripts, versions, and patristic citations, and the author's theology and style—are all still required. In this, pregenealogical coherence does not require any less of us as text critics. If anything, it requires slightly more because it adds one more type of evidence that we need to consider. The benefit, of course, is that sometimes this extra piece of the puzzle may be just the one needed to reconstruct a better, more accurate picture of the text's origin and subsequent history.

3.4.3. Its Use Requires Skill and Practice

Finally, if pregenealogical coherence is just one more type of text-critical evidence, then, like all the others, it takes skill and care to use well. This is especially true insofar as the quality of coherence for any given reading needs to be weighed against the nature of the reading itself. Generally speaking, the more unusual a variant reading, the lower the coherence can be before we suspect multiple emergence. Conversely, the more typical the variant, the higher the coherence should be to exclude the possibility that it originated from more than one source. As with so much in textual criticism, there are no absolute rules here, and experience serves as the best guide. The next chapter will explore how such judgments work in practice.

3.5. Conclusion

Despite its limitations, pregenealogical coherence constitutes an important new type of text-critical data for the New Testament. In Mark 1:1, the evidence showed that the witnesses of the longer reading have strong pregenealogical coherence, while witnesses of the shorter reading have much weaker. The same was true in Matt 16:27, where the witnesses of reading *a* have almost perfect coherence, whereas the witnesses for the two other readings have weak coherence. In both examples, weak coher-

ence is evidence that the secondary readings in question probably were created multiple times. This shows how the new evidence of pregenealogical coherence, working in tandem will traditional text-critical arguments, helps resolve sometimes longstanding and important textual problems. The downside of pregenealogical coherence is that the current form of the software for using it can require a real investment in time and effort. Moreover, because it lacks information about direction, it can, at best, suggest *that* a reading originated multiple times; it cannot suggest *where* it originated. Fortunately, both shortcomings are addressed by genealogical coherence, which is the subject of our next chapter.

3.6. Key terms

- collation
- connectivity
- harmonization
- manuscript cluster
- Majority Text (MT)
- *Text und Textwert* (*TuT*)
- variant address
- variation unit

4
Genealogical Coherence

This chapter introduces genealogical coherence, showing what it is and how it is used to make textual decisions. We give examples from Acts and the Catholics Letters to illustrate how genealogical coherence differs from pregenealogical coherence. As before, we end with some limitations.

In the previous chapter, we looked at pregenealogical coherence and saw how it can provide new information for resolving textual problems. The main limitation of pregenealogical coherence, however, is that it only measures how often witnesses agree with each other. What it does not show is how they relate where they disagree. For that information, we must turn to the second type of coherence in the CBGM: genealogical coherence. Following a similar approach as in the last chapter, we will here consider what genealogical coherence is in principle before considering how to use it.

4.1. The Basic Concept

As explained previously, genealogical coherence adds the crucial element of *direction* to pregenealogical coherence. Wherever two witnesses are compared with each other, the result is that: (1) they may agree so that *A* = *B*; (2) one may derive from the other so that *A* → *B* or *A* ← *B*; or (3) their relationship may be uncertain to the editors so that *A* –?– *B*. Pregenealogical coherence is based only on the first of these, but genealogical coherence incorporates all three. It is important to note that *all* the information about this direction is attained from the editors' own decisions at the local stemmata. At each place of variation, the editors make their decisions as best they can, sometimes leaving them open, and the data accumulate in the form of genealogical coherence.

By way of illustration, we can turn again to the text of Codex Sinaiticus (01) and Codex Vaticanus (03). Within the Catholic Letters, their genealogical coherence is represented in table 4.1.

Table 4.1. The genealogical coherence of 01 and 03 in the Catholic Letters

Total points of comparison	01 = 03	01 → 03	01 ← 03	01 –?– 03
3,003	2,613 (87.1%)	89	250	51

The first column shows the number of places the two could be compared in the Catholic Letters.[1] The second column should be familiar now, as it is simply their pregenealogical coherence. The third and fourth columns show the number of places where the editors decided that the reading of 01 was prior to that of 03 or vice versa. The last column combines the places where the relationship in the local stemmata is undecided or indirect.[2] (In the online software, these last two categories are separated, but we have combined them here for simplicity.)

What this information tells us is that 03 has almost triple the number of prior readings in relation to 01 (250) than 01 has in relation to 03 (89). Thus, the predominant direction of influence, or "textual flow," is from 03 to 01. Within the CBGM, this makes 03 a *potential* ancestor of 01. As noted already, this does not mean that the CBGM is suggesting that Codex Sinaiticus was copied from Codex Vaticanus. Showing that would take much more than a mere statistical comparison. Instead, the CBGM is claiming only that many of the readings found in 03 were progenitors for the readings now found in 01. Knowing this type of overall relationship, however, and the relationship of all other witnesses in the CBGM, can help us revisit certain variants in light of these data and see where the two do not fit well. Where they do not, we may need to revise our decision at that point.

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1. We have already noted the glitch in the agreements between these two witnesses. See 29 n. 29, above.

2. For example, if a local stemma is set as *a* → *b* → *c*, then the relationship of *a* to *c* is indirect.

4.2. How to Use Genealogical Coherence

Using genealogical coherence works much the same as using pregenealogical coherence. Our concern is with the quality of coherence among the witnesses of particular variants. Where coherence is weak, this may indicate that the reading was not well copied. However, because genealogical coherence includes information about how (not just how closely) witnesses are related, it allows us to see the most likely sources of variants as well. This is a major advantage over pregenealogical coherence, which by its nature can never suggest the point of origin for variants.

Beside this, the main difference with using genealogical coherence is the form it takes within the CBGM. The good news is that genealogical coherence is much easier to access, since the CBGM does much of the work for us by combining the evidence of pregenealogical coherence with the accumulating genealogical coherence and displaying them in what are known as "textual flow diagrams." These diagrams come in different forms, but they all use genealogical coherence to connect witnesses at specific points of variation. That is, they offer a simplified graphic representation of how strong or weak the coherence is for specific attestations. The term *attestation* is used frequently with the CBGM; it simply refers to a group of witnesses that share (i.e., attest to) the same reading in a variation unit. Textual flow diagrams graphically display the coherence (or lack of it) within attestations. The most important feature to remember about them is that we need to pay attention to the data *behind* them.[3] There is, with these diagrams, always more than meets the eye. We will explain how to access this additional data below; for now, an example will orient us to their use.

4.2.1. The Basic Procedure

As a simple example, let us consider the variation in 1 Pet 1:23/18–22, which concerns the order of words in the phrase "through the living and abiding word of God" (διὰ λόγου ζῶντος θεοῦ καὶ μένοντος). The three variants in the CBGM at this point are:

a. λόγου ζῶντος θεοῦ …

3. See Gerd Mink's closing warning on this at http://intf.uni-muenster.de/cbgm2/guide_en.html.

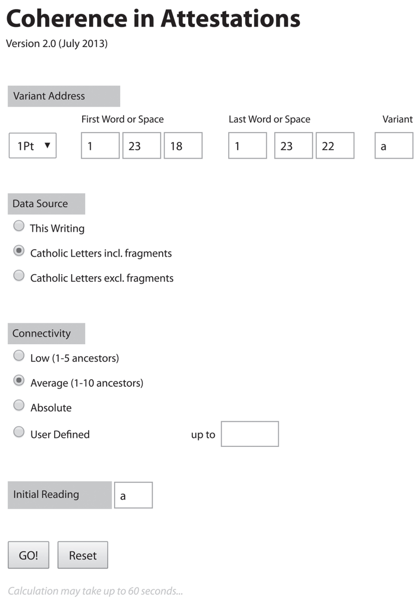


Fig. 4.1. The interface for the Coherence in Attestations tool

b. λόγου θεοῦ ζῶντος – 044 88 307 431 453 621 629 720 915 918 1678
c. ζῶντος λόγου θεοῦ –
d. λόγου ζῶντος – 2818

The ellipsis following reading *a* is taken from the ECM and means that all the rest of the witnesses except those listed for the other readings support reading *a*. Reading *c* is attested only by a patristic source (Didymus the Blind of Alexandria), so it is not included in the CBGM (hence the dash above). The question is whether readings *a* and *b* show relatively good or bad genealogical coherence. Reading *d* has no coherence to speak of, since it is attested only by one witness; nevertheless, we can still use the diagrams to study its possible source, whether *a* or *b*. To find out, we use the Coherence in Attestations tool available at http://intf.uni-muenster.de/cbgm2/GenQ.html. Starting with the attestation for reading *a*, we can leave the default settings in place for now and enter our variant reference into the online form as shown in figure 4.1. The result is a diagram connecting a great many witnesses shown in figure 4.2.

This shows all the witnesses for reading *a*, with each witness connected to a potential ancestor that shares reading *a*. In no case does a witness with

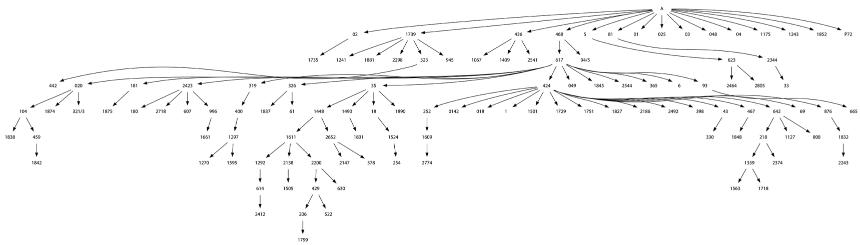


Fig. 4.2. A textual flow diagram for 1 Pet 1:23/18–22*a*

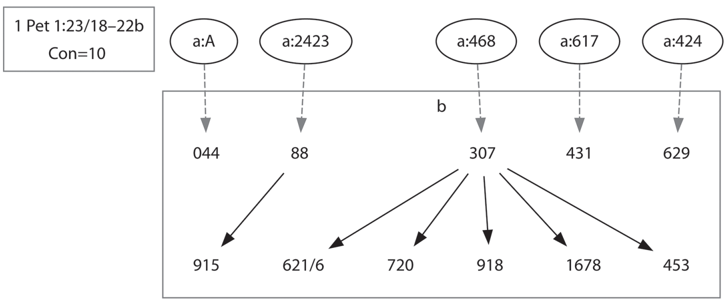


Fig. 4.3. The textual flow diagram for 1 Pet 1:23/18–22*b*

reading *a* have to look outside the attestation for its ancestor. This means that reading *a* has perfect coherence. This is not, however, the case with the other two variants at this point. To see them, we need to return to the input form and change the variant from *a* to *b*. The result is the diagram shown in figure 4.3.

Here we start to see a number of witnesses that must be connected to witnesses outside the attestation, that is, witnesses that do not share the same reading here. Witness 88, for example, is connected to 2423, which has reading *a* (a:2423). Likewise, 307 is connected to 468, which also has reading *a*. In total, we see five witnesses that cannot find a close ancestor within the attestation and thus are left to go outside the attestation where they find their closest ancestors. That means the diagram is showing cases of textual change and, in particular, multiple emergence and its counterpart, coincidental agreement. Within the attestation, we should also note that 621 has /6 after it. This means that its closest ancestor with the same

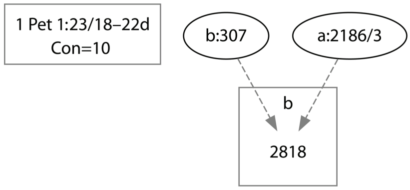


Fig. 4.4. The textual flow diagram for 1 Pet 1:23/18–22*d*

reading (307) is its sixth closest potential ancestor. Where there is no trailing slash, we can assume that the ancestor-descendant relationship is the closest. All this shows us that reading *b* has much weaker coherence than we saw with reading *a*.

Finally, the diagram for reading *d* shows that either reading *a* or *b* could be its source, with *b* slightly more likely (fig. 4.4). This is because 2818's closest ancestor, 307, has reading *b*, whereas its closest ancestor with reading *a* is 2186, its third potential ancestor (note the /3 after 2186).

The Coherence in Attestations tool also provides links to view the local stemma and to Show Table. The latter opens an important window that lists the pregenealogical coherencies for the witnesses in the diagram in descending order. Although not the most user-friendly tool, it provides a crucial feature by giving access to more data than are displayed in the diagram. This can provide crucial context, as we will see, for interpreting the diagrams. For reading *d*, the first part of the Show Table data is shown in table 4.2. This table shows showing the rank (N0), pregenealogical coherence (PEV0), and variant reading (VARID) for the ancestors (G0) of 2818.

Table 4.2. The Show Table results for 1 Pet 1:23/28–22*d*

G0	N0	PEV0	VARID	G1
307	1	97.5	b	
2186	3	93.4	a	2818

If we want to focus on just the textual changes between witnesses, we could instead use the Coherence at Variant Passages module (see http://intf.uni-muenster.de/cbgm2/GenQ.html). This module simplifies the display by showing only relationships where the reading changes from ancestor to descendant. It thus shines the light on where changes occur. It also keeps the whole variation unit in view, which makes it a bit more

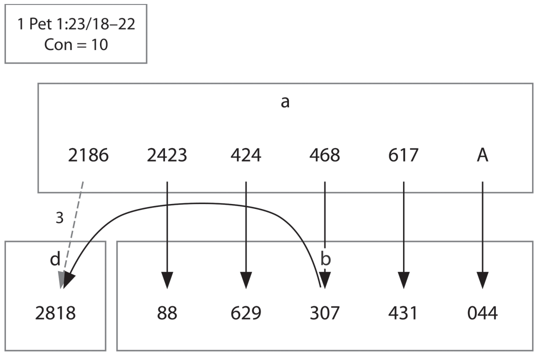


Fig. 4.5. The textual flow diagram for the whole variation unit for 1 Pet 1:23/18–22

economical. The tradeoff is that it does not provide the Show Table link. But it will work for us here as an example. Using the default settings, the diagram for our variation unit looks like figure 4.5.

We notice that the relationships have not changed in this diagram, but the number of them has been significantly reduced. Now, instead of seeing relationships where descendants *agree* with their potential ancestors, we only see the *disagreements*. The result is a simpler diagram that immediately exposes where coherence is weakest.

What is most important in all these diagrams is that the arrows provide a fast and easy way to see where witnesses disagree with their potential ancestors, in other words, where coherence is imperfect. In the case of 1 Pet 1:23, the coherence is weakest in reading *b*, as shown by the five cases where witnesses with *b* must be connected to witnesses with reading *a*. Below we will see that this is true even if reading *b* is assumed to be the initial text rather than *a*, as the default settings assume (see fig. 4.7). The change from *a* to *b* almost certainly happened because of the awkwardness of the order ζῶντος θεοῦ rather than the typical θεοῦ ζῶντος, which is what we find elsewhere in the New Testament (Rom 9:26; 2 Cor 3:3; 1 Tim 3:15; Heb 3:12; 10:31; 12:22; Rev 7:2). Cases such as this, where the genealogical coherence fits so well with what we know about scribal tendencies, help confirm the value of the CBGM's principle that the *overall* relationship between witnesses can provide insight about the relationships between their *individual* variants.

At this point we must emphasize that these textual flow diagrams, while built on the decisions of the editors in the local stemmata, are not merely a presentation of those same decisions in different garb. They are

not, in other words, a case of looking in the mirror and seeing what we already knew. The reason is that textual flow diagrams incorporate the information of pregenealogical coherence, and pregenealogical coherence is independent of the editors' own textual decisions.[4] The pregenealogical coherence operates as a check and balance on the structure of the textual flow diagrams. So, while editorial changes at the level of local stemmata certainly affect them, they do so to a much smaller degree than the data from pregenealogical coherence. Moreover, most of the editors' own decisions in the local stemmata are made in the first pass using only pregenealogical coherence.[5] In this way, the genealogical coherence is used later to check these earlier decisions and also to make the small percentage of remaining ones. So, while subjectivity is by no means eliminated, it is used in such a way that the risk of vicious circularity is excluded in practice.[6]

4.2.2. Key Settings in Textual Flow Diagrams

Before moving to consider further examples from Acts and the Catholic Letters, we need to explain the various settings available in the CBGM for studying genealogical coherence. Knowing how to use these settings is important because not all textual variants are the same, and the settings allow us to adjust the textual flow diagrams to reflect those differences.

The first thing to note is that there are different interfaces for accessing these diagrams for Acts and the Catholic Letters. The interface for the Catholic Letters is about ten years older and so is a bit more cumbersome. We will explain the main features using this version, then discuss the new features available for Acts.

To access textual flow diagrams for the Catholic Letters, we need to use either the Coherence at Variant Passages tool or the Coherence in Attestations tool. As you now know, the latter is best when one wants to focus on

4. For more on this, see Gurry, *Critical Examination*, 137.

5. For Acts, only 423 of 7,446 variation units were left open after the local stemmata were first built using only pregenealogical coherence. In the second phase, when genealogical coherence was available, many passages were revisited and decisions were made in 227 further variation units, leaving just 196 passages. In a third and final phase, the editors made an additional forty-one textual decisions, ultimately leaving 155 variation units open. See ECM III/1, 28–30.

6. For the guidelines that the editors used to edit the local stemmata for Acts, see ECM III/3, 1.

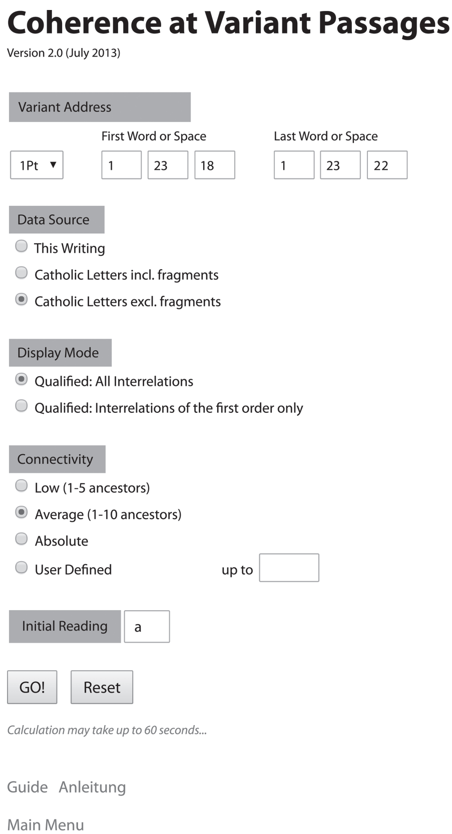


Fig. 4.6. The Coherence at Variant Passages tool for the Catholic Letters

one reading and study the coherence of its witnesses with more precision. This also gives ready access to the Show Table link that lists the pregenealogical coherence percentages behind all the relations in the diagram.[7] The interface for Coherence at Variant Passages is shown in figure 4.6.

To begin, we need the variation unit's address from the ECM. This works the same way as it did for our second example in the previous chapter. For our variant in 1 Pet 1:23/18–22, we select "1Pt" from the drop-

7. See Mink, "Guide," §3.c. This is especially useful when combined with a connectivity of Absolute, as it allows one to check how narrow the pregenealogical margins are between competing potential ancestors. If the difference between two ancestors is relatively slim, then the choice should be made on philological grounds. See the example in 2 Pet 3:10 discussed in n. 23 below.

down menu and then enter the chapter, verse, and the number of the first word of the variant into the first three boxes.[8] The computer automatically fills in the chapter and verse in the next set of boxes, so all we need to do is add the number of the final word in our variant (22) in the last box. (In cases where a single word is in question, the first and last word will always be the same number.)

The next setting is called Data Source. For most searches, the default setting is fine. But in some cases, we may want to limit the search so that it only uses data from the book we are studying. On the other hand, we may want to expand our search to include data from fragmentary witnesses. A fragmentary witness is defined for the Catholic Letters as one that is "not extant in Jas, 1Pt, 2Pt, 1Jn and at least one of the smaller letters."[9] Fragmentary witnesses are included by default when selecting This Writing as the data source, but they should be used with caution, since they can skew rather than clarify the data. Nevertheless, the option is there to be explored.

The next option, Display Mode, determines how the textual flow diagram shows witness relationships. The default setting is Qualified: All Interrelations, which shows relationships *between* variants (hence *inter*-) even if they are not the closest possible relationship. The alternate option, Interrelations of the first order only, shows only those relationships that are the closest (e.g., 2186 → 2818, above). This setting can be a useful way to simplify diagrams, but this simplicity can also hide important alternative ancestors and so is rarely the best option.

The next setting, Connectivity, is the most important, as it affects not just the on-screen display of the diagram but also its underlying construction. The Connectivity setting tells the computer how tightly or loosely to connect witnesses. The setting is called Connectivity because it should be adjusted based on how genealogically significant or "connective" the variant in question is thought to be. For a variant involving the omission or addition of an article, for example, the connectivity would be set to Low, since this is an easy variant for scribes to create without reference to another source. At the other extreme, the words of the so-called *Comma Johanneum* that describe the Trinity in 1 John 5:7–8 would require us to set the connectivity much higher than Average, since it is difficult to

8. See the appendix regarding how words are numbered by the ECM.

9. Ibid., §3.b.

imagine multiple scribes creating a variant of this length and significance independently of each other. In other words, this variant creates a strong genealogical connection between the witnesses, so we should give the computer more latitude to connect the witnesses that attest it.[10]

The options for connectivity are Low (1–5 ancestors), Average (1–10 ancestors), Absolute, and User Defined. The numbers in parentheses indicate how far down the list of potential ancestors the computer is allowed to go in order to find an ancestor that agrees. Thus, with the Average setting, the computer is allowed to connect each witness with one of its ten closest potential ancestors. If none of these shares the same reading, a potential ancestor with a different reading must be chosen, and coherence will be weaker than it would be otherwise. This is what happened in the case of 1 Pet 1:23 for reading *b*. For the five witnesses shown with reading *b*, none of their ten closest potential ancestors shared reading *b*, so the computer had to find ancestors with reading *a*. The Absolute setting gives the computer the most flexibility. This connects each witness with *any* potential ancestor with the same reading. In this case, the diagram will list the rank of each ancestor next to the arrow so that one knows how far down the list of potential ancestors the computer had to go.

Perhaps the easiest way to think about connectivity is that the lower it is, the more changes between witnesses one sees in the textual flow diagram. The higher it is, the fewer. At Absolute, you will usually only see one change for each variant. The importance of connectivity is that it allows us to test our hypotheses about how different variants were transmitted. Like all textual criticism, the interpretation of textual flow diagrams requires experience to use well. The best approach is to work through a number of examples and test one's own explanations about variant relationships against the diagrams. Start with a series of variants you think were easy for scribes to create, set the connectivity low, and see if there are any surprises in the results. From there, start to move to more significant variants and test the various connectivity levels to see how the results are affected.

The final option when using the coherence modules is to choose the

10. On the other hand, it is not certain that all manuscripts attesting to a peculiar reading are closely related, since such readings have more potential to find their way into otherwise unrelated witnesses. For a study of this phenomenon in the *Pericope Adulterae*, see Tommy Wasserman, "The Patmos Family of New Testament MSS and Its Allies in the Pericope of the Adulteress and Beyond," *TC* 7 (2002), esp. §56, http://purl.org/TC/v07/Wasserman2002/Wasserman2002.html.

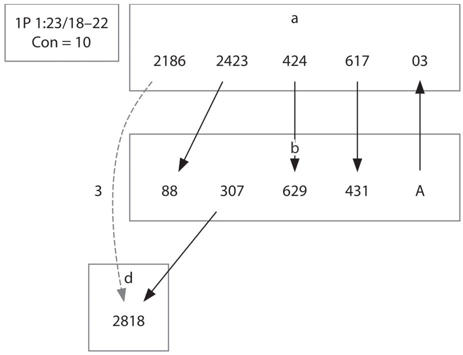


Fig. 4.7. The textual flow diagram for 1 Pet 1:23/18–22 when reading *b* is set as the initial text

Initial Reading. This allows one to test how the coherence changes if an initial reading different from the one preferred by the editors of the ECM is chosen. Figure 4.7 shows the results of choosing reading *b* instead of *a* as the initial text for 1 Pet 1:23/18–22.

Note that the *A* witness is now in the *b* box instead of the *a* box. The only other changes are that 03 has now appeared as a descendant of *A* and 468 has now disappeared as the ancestor of 307, since it is not needed. Witness *A*, which now has reading *b* per our change in the setting, has become the closest potential ancestor with the same reading for 307. Before, when *A* was set to the *a* reading, this relationship was not available. This illustrates how the choice of which reading is set as the initial reading in a textual flow diagram can affect the resulting coherence. As a result, this setting can rarely, if ever, be neglected when studying coherence. It is always best to check the textual flow diagrams with each of the main possible readings set as the initial text. In this case, the diagram has changed so little that our decision to prefer reading *a* was certainly the right one.

For the material from Acts, the latest interface has been significantly upgraded. It is now much more responsive and informative. However, the extra data also give us more to explain, so we will save it for our first example from Acts below and move now to examples from the Catholic Letters.

4.3. Examples

It is now time to look at several significant examples to see how genealogical coherence may be used. The examples that follow are taken from

Acts and the Catholic Letters, which is where this coherence is currently available.[11] We will look at more examples than before not only because genealogical coherence takes more practice to master than pregenealogical coherence but also because it is much more useful.

4.3.1. 1 Peter 4:16

Our first example illustrates how the CBGM led the editors of the ECM to reconsider the value of later manuscripts, even when they diverge from our earliest dated textual evidence.[12] The context for 1 Pet 4:16 addresses how Christians should interpret the agonizing problem of unjust suffering. Rather than sulk in shame, readers are encouraged to glorify God. But exactly what they are to glorify God *for* depends on the variant one adopts. The two main choices are to glorify God "in this name" (ἐν τῷ ὀνόματι τούτῳ) or "in this part" (ἐν τῷ μέρει τούτῳ). The former seems to refer to the name of Christ and thus to being identified as a Christian. The latter reading is more difficult to make sense of and may be a reference to either one's role as a Christian or perhaps one's lot in life (see LSJ, s.v. "μέρος"). The evidence in the ECM for each reading is:[13]

a. ἐν τῷ μέρει τούτῳ – 104 180 206 254 307 **Byz**. **Sl** and many others
b. ἐν τῷ ὀνόματι τούτῳ – P72 01 02 03 044 33 1611 1739 Cyr **L:**AVT **K:**SB **S:**PH **A G Ä** and many others

The stronger reading on external grounds is clearly reading *b*, with its early third- or fourth-century manuscripts and almost unanimous versional

11. For additional examples, see Gurry, *Critical Examination*, 74–83; Gurry, "How Your Greek NT Is Changing: A Simple Introduction to the Coherence-Based Genealogical Method (CBGM)," *JETS* 59 (2016): 686–89; Annette Hüffmeier, "The CBGM Applied to Variants from Acts," *TC* 20 (2015), http://rosetta.reltech.org/TC/v20/TC-2015-CBGM-Hüffmeier.pdf.

12. This example is further discussed in Wasserman, "Criteria for Evaluating Readings," 599–603. Note, that the data there are based on an earlier version of the CBGM (and ECM IV/1–4).

13. We include the preposition for clarity, though it is not part of the variation unit in the ECM. The ECM also lists three other poorly attested and clearly secondary readings: εν τω μερει τουτου, εν τουτω τω μερει, and εν τω μερει τουτω η τω ονοματι τουτω.

support (Latin, Coptic, Syriac, etc.). Reading *a*, on the other hand, is not attested until the ninth century in majuscules such as 018, 020, and 025, all of which are Byzantine. The only versional support for *a* is the Old Church Slavonic. From this evidence, it is obvious why reading *b* has been preferred by most commentators[14] and most editions, including NA[27]/UBS[4], SBLGNT, and THGNT.

In contrast to the external evidence, Gerd Mink points out that the internal evidence strongly favors reading *a*, since the use of μέρει here is quite unusual. Moreover, *ὀνόματι* has a ready transcriptional explanation, given its use just two verses earlier in 1 Pet 4:14. A number of witnesses even add *ὄνομα* after θεοῦ in the latter half of 1 Pet 4:14, showing clearly that some scribes were influenced to add this word by the immediate context. Mink concludes that reading *b* "can hardly have served as the source for *a*."[15]

Commentators have regularly agreed with Mink on the internal evidence, but they usually conclude that the external evidence is simply too weighty and so side with reading *b* in the end. As Thomas Schreiner says, "The external evidence supports the reading in the text [reading *b*], though the variant [reading *a*] is surely the harder reading. In this case the external evidence is decisive enough to justify the inclusion of what we find in NA[27]."[16]

With the advent of the CBGM, however, the editors of the ECM (and NA[28]/UBS[5]) have reevaluated the external evidence and concluded that the Byzantine manuscripts may indeed preserve very early readings, even ones that have disappeared from other streams of the textual transmission.[17]

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14. E.g., Leonhard Goppelt, *A Commentary on I Peter*, trans. John E. Alsup (Grand Rapids: Eerdmans, 1993), 328 n. 47; F. W. Beare, *The First Epistle of Peter: The Greek Text with Introduction and Notes*, 3rd ed. (Oxford: Blackwell, 1970), 193; Edward G. Selwyn, *The First Epistle of St. Peter* (London: Macmillan, 1946), 225; Mark Dubis, *1 Peter: A Handbook on the Greek Text*, BHGNT (Waco, TX: Baylor University Press, 2010), 153; John H. Elliott, *1 Peter: A New Translation with Introduction and Commentary*, AB 37B (New York: Doubleday, 2000), 796; Paul J. Achtemeier, *1 Peter*, Hermeneia (Minneapolis: Fortress, 1996), 303–4 n. 6.

15. Mink, "Problems of a Highly Contaminated Tradition," 43. This variant is also discussed in Mink, "Was verändert sich in der Textkritik," 61–62. Mink's discussion is based solely on the data for James, whereas we include all the data from the ECM IV[2].

16. Thomas R. Schreiner, *1, 2 Peter, Jude*, NAC 37 (Nashville: Broadman & Holman, 2003), 226 n. 38.

17. This view was anticipated by Günther Zuntz, who regarded the Byzantine

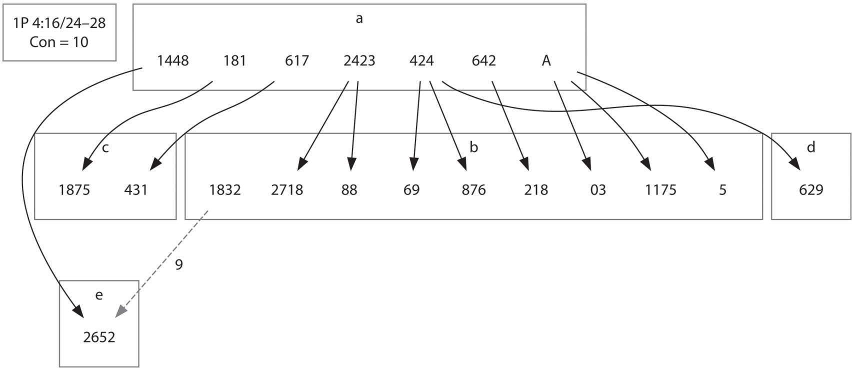


Fig. 4.8. The textual flow diagram for 1 Pet 4:16/24–28 showing multiple cases of *b* deriving from *a* but none of the reverse

The reading in 1 Pet 4:16 is a case in point, as they have now reversed the decision from the NA[27] and printed μέρει instead of ὀνόματι. In this, they concluded that the much later Byzantine manuscripts have preserved the earliest reading, an application of the principle that early readings can be preserved in late manuscripts.

The genealogical coherence speaks in favor of the editors' conclusion of preferring *a* rather than *b*. In this case, the default settings will serve us well to see why this is the case. Whereas reading *a* shows perfect genealogical coherence, reading *b* does not (fig. 4.8). A total of eight witnesses with *b* are descended from witnesses with reading *a*. We get the same basic picture even if we set reading *b* as the initial text (fig. 4.9).

This suggests that, if reading *b* was the original source of reading *a*, reading *a* must have nevertheless developed from *b* a number of times as the text was subsequently copied.[18] The simpler explanation, in light of the transcriptional evidence already discussed, is that it also developed in this way in the first place. Assuming reading *a* as the initial text puts the coherence in much better conformity with the editors' own decisions elsewhere *and* with the evidence of pregenealogical coherence. Both come into play in the textual flow diagrams. Most importantly, this comports

text as a late fixation of one of the earlier textual streams. See *The Text of the Epistles: A Disquisition upon the Corpus Paulinum*, Schweich Lectures 1946 (London: Oxford University Press, 1953), 254.

18. Mink, "Problems of a Highly Contaminated Tradition," 44.

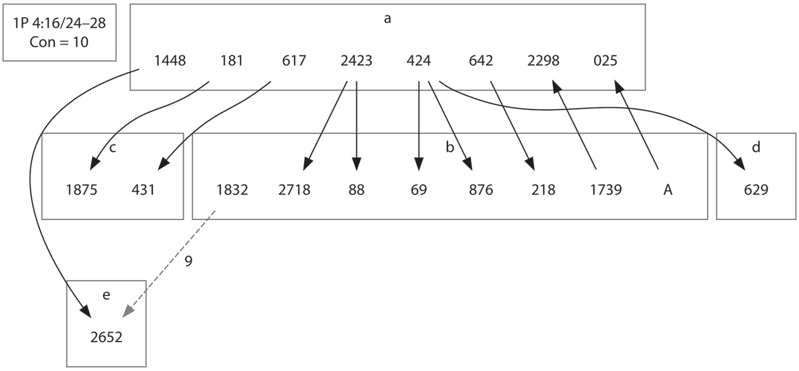


Fig. 4.9. The textual flow diagram for 1 Pet 4:16/24–28 with reading *b* set as the initial text

with the strong transcriptional evidence in favor of μέρει from a philological standpoint. Thus, the internal and external evidence now point in the same direction because the external evidence has been reevaluated in light of the data from the CBGM. In this example, we see how the CBGM works with traditional text-critical judgments, both confirming and challenging them. As a result, the bold dots that marked this variation in the ECM IV[1] were dropped, and reading *a* was printed as the unqualified initial text in the ECM IV[2] and hence in the NA[28]/UBS[5].

4.3.2. 2 Peter 3:10

Speaking of changes in the NA[28]/UBS[5], one of the most significant is found in 2 Pet 3:10.[19] In the course of a vivid discussion of the eschaton, readers are told that on the day of the Lord "the heavens will pass away with a rush, and the elements will dissolve by fire, and the earth and all the works in it will.…" The final verb of this verse presents us with one of the most difficult variants in the New Testament. There have been no less than fifteen different conjectures (i.e., readings not extant in any Greek manuscript)

19. For a monograph-length study, see Christian Blumenthal, *"Es wird aber kommen der Tag des Herrn": Eine textkritische Studie zu 2Petr 3,10*, BBB 154 (Hamburg: Philo, 2007).

suggested since 1853.[20] The ECM records eight different readings for 2 Pet 3:10/48–50, the most important of which are:

a. *οὐχ εὑρεθήσεται* – **K:**SV^{V} **S:**Ph^{mss}
b. *εὑρεθήσεται* – 01 03 018 025 323 424Z 1175 1241 1448 1739T 1852 1881 **S:**Ph^{mss}H^{msM}
c. *εὑρεθήσονται* – 398 **A**^{mss}
d. *εὑρεθήσεται λυόμενα* – P72
e. *ἀφανισθήσονται* – 04 **A**^{mss}
f. *κατακαήσεται* – 02 048 33 81 88 94 104 206 218 254 307 424T 1505 1611 2138 2200 2298 2344 *al* **Byz** Cyr PsOec **S:**H^{T} **G Sl**:ChDMSiS[21]
g. *κατακαήσονται* – 5 43 623 629 630 1243 1609*V 1735 2186 2492 2805

The most commonly adopted reading is *b* because of the support of 01 and 03 and because it is almost universally considered more difficult than all the others. The problem is that many have seen it as simply too difficult to be the initial text. The verb's normal sense of "to find" makes little or no sense here. Most English translations hide the difficulty by glossing it as "will be exposed," presumably referring to God's searing judgment. But this use of the verb is rare at best.

The most natural reading in the context is *f*, which has the earth and its works being "burned up," a fate very much in keeping not only with the beginning of the verse but also with verse 7, where the heavens and the earth are "kept for the fire in the day of judgment." The problem with reading *f* is that it makes such good sense that it is hard to imagine how it could lead to the other readings. What is more, precisely because of the context, it is easy to explain as a harmonization to the sense of the passage.[22]

Reading *g* is clearly derived from reading *f*, just as *c* is from *b*. Both can be explained as assimilation to the other future middle ending (-*σονται*) in

20. These can be explored in some detail using the excellent Amsterdam Database of New Testament Conjectural Emendation, which is now a part of the NT.VMR: http://ntvmr.uni-muenster.de/nt-conjectures (enter 2 Pet 3:10).

21. About fifty more minuscules are listed in the ECM, but we omit them here for the sake of space. We include all witnesses that appear in the diagrams (note that 252 and 468 [see fig. 4.19] are cited under the siglum **Byz** in the ECM).

22. The verb *κατακαίω* is the most common for burning in the Greek Bible and thus a natural word for scribes to use here.

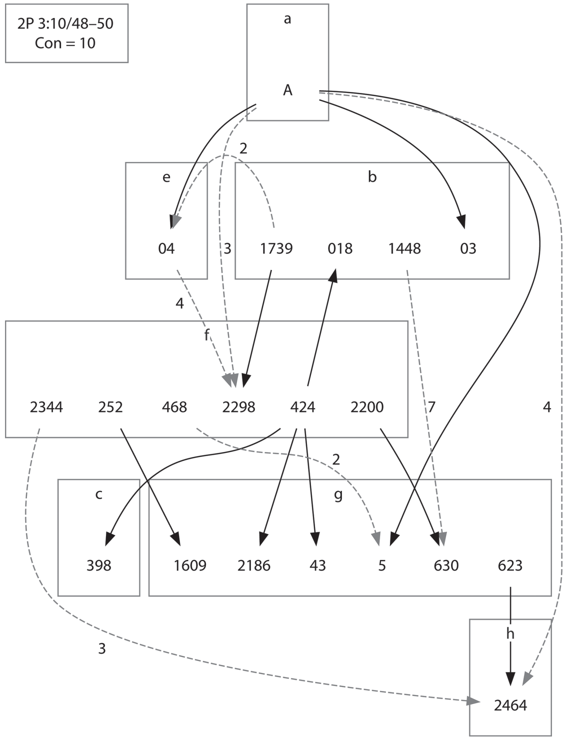


Fig. 4.10. The textual flow diagram for 2 Pet 3:10/48–50 with reading *a* set as the initial text

this verse.[23] Reading *d* ("will be found dissolved") looks like an attempt to clarify reading *b*, while reading *e* ("will disappear") looks like another way to express the meaning of reading *a* ("will not be found"). This, at least, is Mink's judgment, who argues that reading *a* is demanded by the logic of the passage, making it an "almost unavoidable conjecture."[24] He argues that this best explains the rise of all the other readings. The local stemma from the CBGM for this variation unit has readings *b*, *c*, *e*, *f* all deriving from *a*, *d* deriving from *b*, and *g* deriving from *f*.

There is certainly more that could be said about this variant, but we

23. Note the similar variation in the case of λυθήσεται/λυθήσονται.

24. Mink, "Problems of a Highly Contaminated Tradition," 27. This is the only conjecture in the ECM of the Catholic Letters; that is, the editors have adopted a text that is not attested in any extant *Greek* manuscript.

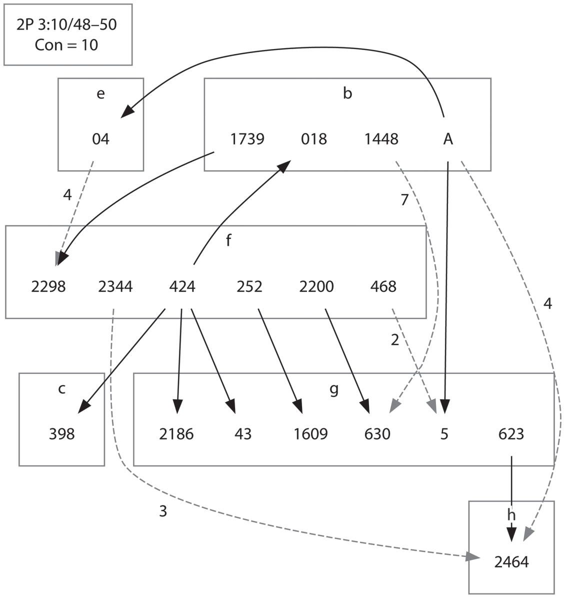


Fig. 4.11. The textual flow diagram for 2 Pet 3:10/48–50 with reading *b* set as the initial text

want to ask what the genealogical coherence says about this proposed scenario. Does it fit with the rest of the data from the CBGM? To answer this, we need to look at textual flow diagrams with the three main readings (*a*, *b*, *f*) set as the initial text. Once again, the default connectivity should serve us well. We will also set the display to all interrelationships so that we do not to miss any key potential ancestors. What we want to look for is which diagram gives us the best coherence for each of our three main readings. The results are given in figures 4.10, 4.11, and 4.12.

The diagrams show perfect coherence for *a* and *f* when they are set as the initial text. When *b* is set as the initial text, there is one instance where it has emerged from *f*. These are not very stark differences, which means that the genealogical coherence here cannot be determinative. The coherence in the first diagram is not surprising, since the only witness is the *A* witness, which, by definition, has no ancestors. In other words, a study of genealogical coherence gives little help. We will have to turn to our traditional evidence and let the decision about the initial text rest there.

However, that is not all there is to be said about coherence here. Interestingly, the first diagram (fig. 4.10) shows that, if we do not assume that

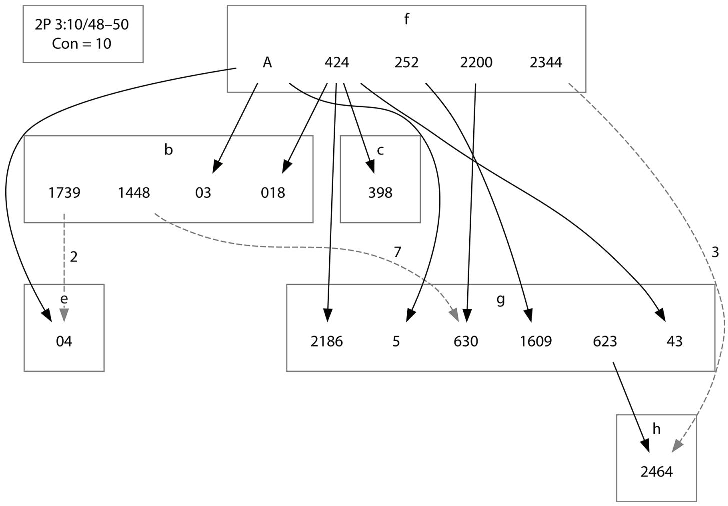


Fig. 4.12. The textual flow diagram for 2 Pet 3:10/48–50 with reading *f* set as the initial text

reading *f* is the initial text, there are three possible source variants for it: *a*, *b*, or *e*. Although the current local stemma has *f* deriving from *a*, the closest source is actually a witness with reading *b*.[25] Clicking the Show Table button in the Coherence in Attestations tool reveals that the three closest ancestors for 2298 are 1739, with a pregenealogical coherence of 95.3 percent agreement; *A* with, 91.6 percent; and 04, with 90.2 percent. Thus 1739 is the closest potential ancestor here by a good margin, and the local stemma should be revised to reflect this.

4.3.3. 1 John 5:6

A final example from the Catholic Letters, 1 John 5:6/16, demonstrates how the CBGM can shed light on the development of the text.[26] The readings are:

25. We could say the same about reading *c*, which derives from *f* rather than *b* in these diagrams. However, the eleventh closest ancestor to 398 is 018, which has reading *b*. Because the pregenealogical coherence of 398 with 018 is only about 1 percent less than it is with its closest potential ancestor, 424, which has *f* here, the difference is not enough to change the local stemma.

26. This example is discussed further in Wasserman, "Coherence Based

a. *δι' ὕδατος καὶ αἵματος* – 03 044 218 323 424T 642 720C 808 1739T 1881 *al* **Byz** Cyr PsOec **L:**KV **K:**V[v] **S:**P **G:**A1B **Sl:**S
b. *δι' ὕδατος καὶ πνεύματος* – 945 1241 1831 L156 Cyr **L:**AM
c. *δι' ὕδατος καὶ αἵματος καὶ πνεύματος* – 01 02 6 33V 93 104 307 424Z 436 453 467 720* 876 1067 1409 1448 1490 1611 1827 2200 2374 *al* Cyr **K:**S[mss]B **S:**H **Sl:**ChM **Ä**[ms]
d. *δι' ὕδατος καὶ πνεύματος καὶ αἵματος* – 025 0296 5 81 88 254 442 621 623 630 915 996 1243 1523 1524 1729 1845 *al* **A** **Ä**[mss]
e. *δι' ὕδατος καὶ αἵματος καὶ πνεύματος ἁγίου* – 61 326 1837 **K:**S[ms]

The reading adopted by the ECM here is the well-attested *a*. The common explanation for the intrusion of *πνεύματος* in the other four readings (*b*–*e*) is that copyists recalled the text in John 3:5, which has *ἐὰν μή τις γεννηθῇ ἐξ ὕδατος καὶ πνεύματος*.[27] But Bart Ehrman has pointed out that reading *c* is actually "the earliest and most widespread reading."[28] Since the exact phrase *ὕδατος καὶ πνεύματος* is not present in this reading, he does not think John 3:5 explains the origin in the first instance, even if the familiar words of Jesus to Nicodemus may have influenced some of the other readings.[29] Instead Ehrman suggests that the change, a simple addition of six letters (ΚΑΙ $\overline{\text{ΠΝΣ}}$ = *καὶ πνεύματος*), was made in order to affirm the orthodox doctrine of Jesus's birth through the miraculous working of the Holy Spirit.

It is true that the third reading is early and widespread, but, interestingly, the CBGM shows that reading *d* is attested by five witnesses that have the initial text (*A*) as their closest potential ancestor in the Catholic Letters: 025 (91.4 percent), 5 (90.4), 81 (91.2), 1243 (90.4), and 1852 (90.4). Because of this, reading *d* may be just as early. The close relationship these witnesses have with the initial text attests to how early a text the editors think they have. More importantly, as we saw in 1 Pet 4:16, late

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Genealogical Method," 210–13. In the readings, we have included the words δι' ὕδατος καί for clarity, even though they are not actually part of the variation unit in the ECM.

27. So Metzger, *Textual Commentary*, 646–47.

28. Ehrman, *Orthodox Corruption of Scripture*, 70. Ehrman dated this reading to the early third century because he thought the reading was attested by Origen (70–71), which it is not (Wasserman, "Coherence Based Genealogical Method," 211–12).

29. Ehrman, *Orthodox Corruption of Scripture*, 71.

manuscripts may not preserve merely early readings; sometimes they may preserve the *earliest* reading. For that reason, reading *d* could conceivably predate reading *c*.

If we now check the coherence for this variation, again using the default settings, we find that the imperfect coherence for both reading *c* and *d* suggests that they arose several times independently in the tradition, almost always from reading *a* (fig. 4.13).

In this case, we cannot appeal to the earlier attestation of reading *c* in relation to reading *d* as a way to rule out the influence of John 3:5. As the local stemma for this variation has it, both readings *c* and *d* appear to have emerged from reading *a* independently of each other. The simplest explanation for how this could happen is the influence of John 3:5.[30] Whether theology also played a role is harder to say, although it certainly could have in some cases. A full study would also need to take the variation at the end of the clause into account, of course, but this already illustrates how genealogical coherence can shed light on explanations for how variants arose.

4.3.4. Acts 1:26

We come now to examples from Acts, where we meet two obvious differences in the CBGM tools when compared to the Catholic Letters. The first is that the tools for studying coherence have been combined into one page. It is now simply called Coherence and Textual Flow. The second change is that the coherence settings can now be changed on the fly; one need not reload the page every time a setting is changed. This makes it much easier to test the different settings. Other changes will be noted as we look at our first example from Acts 1:26/8, a place where the ECM now diverges from the text of the NA[28]/UBS[5].

In the context, the eleven disciples are choosing a replacement for Judas. After narrowing the choice to Joseph called Barsabbas and Matthias, they use lots to identify Matthias as the new twelfth apostle. However, there is some ambiguity in exactly how the lot was decided for Matthias, and the phrase involves a variation in Greek. The Greek literally reads that "they gave lots *to them* [ἔδωκαν κλήρους αὐτοῖς], and the lot fell on

30. Of course, we should not rule out the possible influence of 1 John 5:6 itself, which goes on to say that "the Spirit is the one who testified."

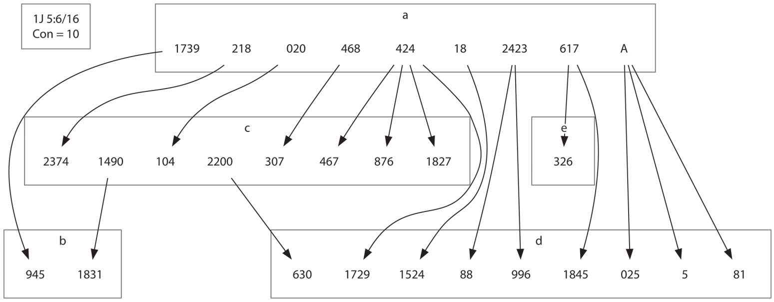


Fig. 4.13. The textual flow diagram for 1 John 5:6/16 with reading *a* as the initial text

Matthias."[31] This seems to mean that the eleven gave lots *to* (or *for*) the two candidates. This, at least, is the reading found in the NA[28]/UBS[5], the SBLGNT, and the THGNT and translated by most modern English versions. But the ECM now follows the reading translated by the KJV and found in most later Greek witnesses, which says instead that "they gave *their* lots [ἔδωκαν κλήρους αὐτῶν], and the lot fell on Matthias." If the subject is still the eleven here, then perhaps the word "lots" (κλήρους) could be understood as "portions," as in the portion of the apostolic ministry that Judas forfeited and that was now being offered to Joseph or Matthias (see 1:17; 1:25 *v.l.*).[32]

In either case, of course, the result is the same: Matthias is chosen rather than Joseph. Still, this variation serves as a good illustration, not least because it is a case where the ECM editors once again show their willingness to follow Byzantine manuscripts against the earliest and most important witnesses such as 01, 02, 03, 04, and 05C1. Therefore, let us consider the external evidence before considering how the genealogical coherence plays out. The evidence from the ECM is as follows:

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31. The phrase "they gave lots" differs from the typical formula "they cast lots" (ἔβαλον κλήρους) as we find in Luke 23:34 (see LXX Ps 21:19; Joel 4:3; Obad 11; Jonah 1:7).

32. See the suggestion in BDAG, s.v. "κλῆρος," 2. The problem with this suggestion, of course, is that the noun is still plural ("portions") and that the very next use of it almost certainly refers to the lot itself and not what was obtained by giving it.

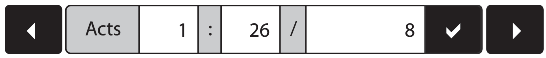


Fig. 4.14. The simplified variation unit address input for Acts

a. αὐτῶν – 05* 08 044 61 94 180 181 307 429 431 436 453 467 522 610 614 619 621 629 630 636 996 1162 1270 1292 1297 1490 1501 1505 1595 1611 1678 1751 1831S 1838 1842 1884 2147 2200 2412 2495 2652 2718 2805 L60 L156S L1825 **Byz** Bas Chrys **L**:5 50 51 54* 56 61 70 73 **S**:H
b. αὐτοῖς – 01 02 03 04 05C1 5 33 81 88 103 104 915 945 1175 1409 1609 1642 1704 1739S 1827S 1891 2298 2344 L1178 L1188 Chrys **L**:V 54/2 58 189 **K**:SBM

As before, what we want to consider is the quality of coherence for each reading. Where coherence is weaker, this may suggest that the reading is secondary. When we turn to the new CBGM interface for Acts, we first see the new, simplified input in figure 4.14.[33]

The left and right arrows allow users to proceed to the next variation unit or go back to the one before. This makes it possible to cycle through a series of variants quite easily. The system also provides helpful prompts now once one clicks on an input box. When a 1 is entered for the chapter, the computer automatically narrows the possible verses in the next box and the same for the specific variation unit in the final box. This makes finding a variation unit both faster and more accurate. Click the check mark when ready, and the results are displayed on the same page.

The next section of the interface is new for Acts. It is a list of the variants and their Greek witnesses taken from the ECM apparatus. This opens the possibility of using the CBGM without the printed ECM in hand, at least for the Greek witnesses. When any given witness is selected, a table pops open showing a wealth of information about that witness's closest relatives (see fig. 4.15).

A user can click to show 10, 20, or all its relatives (Rel) or just its potential ancestors (Anc) or descendants (Des); can limit the data to specific

33. We should also note that each variation unit has its own URL, making reference easy. Our variation can be found at http://ntg.cceh.uni-koeln.de/ph4/coherence#50126008. The usual start page is the same URL up to the hash mark.

Relatives for **05 (a)**

Rel | Anc | Des | 10 | 20 | All | Variant: All+Lac | Chapter: All | A | MT | Frag
Rec | Sim

MT 68.78% • MT/P 66.27% • AA 66.64% • MA 66.82%

1	>	**P74**	68.815%	3160/4592	1046:71:295:20	zz
2	>	**81**	68.396%	2123/3104	686:72:203:20	b
3	>	**03**	68.366%	3514/5140	1176:106:325:19	b
4	>	**1739**	68.298%	3378/4946	1081:140:320:27	zz
5	>	**02**	68.201%	3496/5126	1144:136:319:31	b
6	>	**35**	68.143%	3461/5079	1077:189:318:34	a (MT)
7	>	**2200**	68.082%	3400/4994	1077:161:319:37	a (MT)
8	>	**307**	67.862%	3482/5131	1109:175:326:39	a (MT)
9	>	**1891**	67.771%	3478/5132	1107:184:323:40	b
10	>	**04**	67.718%	2148/3172	677:122:201:24	b

Fig. 4.15. The relatives table for 05 in Acts

chapters of Acts;[34] can filter the results by witnesses to a particular variant in the current variation unit; can include the hypothetical initial text (A) or the Majority Text (MT) as witnesses; can include fragmentary witnesses (Frag); and can now choose whether to include recursive (i.e., indirect relationships) in the local stemmata (Rec) or leave them out (Sim).[35] These options are available almost anywhere in the interface where a witness is cited. This significantly improves on and replaces the Show Table link in the Coherence in Attestations tool for the Catholic Letters.

At the top of the relatives table in the new interface, the system also tells how often the witness agrees with the Majority Text in all places where such a text is defined (MT) and in all places where the main witness is extant regardless of whether the Majority Text is defined (MT/P). Next, the average agreement (AA) and median agreement (MA) with all other

34. This is especially useful for finding block mixture between witnesses.

35. The difference in this last option is in cases where there is a three-tiered local stemma. With Rec, the computer would relate *a* and *c* in *a* → *b* → *c* stemma, but with Sim it would be categorized as no relation. This “simple” option is what is used for the CBGM for the Catholic Letters; there is no other option.

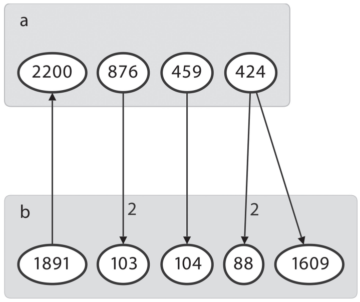


Fig. 4.16. The default Coherence at Variant Passages diagram for Acts 1:26/8

witnesses tell us what levels of agreement with other relatives are high or low. We should note that for 05 these last two numbers are especially low when compared to most other witnesses, indicating just how statistically unique the text of Codex Bezae is for Acts. Finally, we should note that, although our images in this book are black and white, the interface for Acts is helpfully color-coded so that each witness is matched to the same color as its variant for this variation unit.

Following the apparatus in the interface is the local stemma for the variation unit and then two diagrams for studying genealogical coherence, both labeled Coherence at Variant Passages. The first is the type we are used to from the Catholic Letters but now with our settings in the top bar ready to be adjusted at will. Changing any given setting will immediately redraw the diagram. New for Acts is the ability to redraw the diagram using data from only a single chapter. Also new is the ability to include or exclude the initial text (*A*) and the Majority Text (MT). (In the Catholic Letters, the *A* witness is always included.) One can also change the Recursive/Simple setting (see fig. 4.16).

The second type of coherence diagram is a new one that represents the same data in nonlinear form. Instead of connecting witnesses vertically, showing the textual flow from top to bottom, it connects witnesses in a circular shape. By visualizing the data in a way that does not presuppose the point of origin, it can be a useful way to check one's presuppositions about which variant serves as the point of origin for the others. The settings are the same here; again, any changes are reflected immediately. Figure 4.17 displays the results for Acts 1:26/8 with the default settings.

This is perhaps a good place to point out again that genealogical coherence involves much more data than can be shown in either diagram. Both

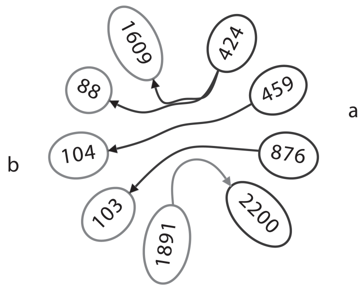


Fig. 4.17. The Coherence at Variant Passages tool showing the chord display

the textual flow diagram and the chord diagram simplify a great amount of data in the underlying database. To see how much information is left out of these relationships, one need only click on a witness number to see how many other close relationships are *left out*. We will explain why this is important to remember before this chapter closes.

At this point, however, we can immediately see that the genealogical coherence for reading *b* is much weaker than that for reading *a*. This is true even if we include the *A* witness and set it to reading *b*, an option that we might expect to improve its coherence. For three witnesses (103, 104, 1609), we must go beyond their twentieth closest ancestors before we find one that shares reading *b* with them. In these cases, reading *b* almost certainly derived from *a*. As Klaus Wachtel writes in the textual commentary for Acts, "The attestation of *a* is perfectly coherent, while *b* seems to have emerged from *a* several times. Even many of the witnesses in the coherent strand with 03 at its top have their first potential ancestors in the *a* attestation."[36]

We can investigate this last point about 03 if we move to the next two sections of the interface. These are the Coherence in Attestations diagram and the General Textual Flow diagram. The first of these is familiar from the Catholic Letters; it is the equivalent of the Coherence in Attestations module, only now we can switch attestations right from the diagram's controls. The second diagram, however, is new to Acts, and it maps all the witnesses of the specified attestation (including those with lacunae) onto the general textual flow for Acts. It thus gives a nice overview of how the text might have developed at this point—if we assume no contamination.

36. ECM III/3, 6.

Turning to the first of these two diagrams, we find that Wachtel's claim about witnesses in the strand with 03 at its top is true only when we consider the *A* witness as part of the *a* attestation. If we do not, we actually see that many of the witnesses that sit below 03 have a closer potential ancestor that is lacunose here. In fact, this is true of all but 1409, 1642, and L1178. This means that the coherence is actually quite good in this part of the diagram. Still, Wachtel is right that the rest of the diagram shows weak coherence, especially in comparison to the nearly perfect coherence of the *a* attestation.[37]

Whether we decide, like the editors, that the evidence of genealogical coherence is enough to overturn the evidence of such early manuscripts as 01, 02, 03, 04, and 05C2 will depend largely on which reading we think is the more difficult one[38] and what value we place on the text of the later manuscripts. Importantly, the CBGM shows that 08, 181, and 307 all have *A* as their closest potential ancestor, so we cannot discount their testimony as easily as we might have without the aid of the CBGM's data. As Wachtel puts it in his commentary, early texts "are not necessarily preserved in early manuscripts."[39] The CBGM suggests that Acts 1:26/8 could be just such a case.

4.3.5. Acts 20:28

Before leaving Acts, we should see what the CBGM has to say about one of the most difficult and significant variants in the book. The text of Acts 20:17–38 records Paul's poignant farewell speech delivered to the elders at Ephesus, a church in which he was heavily invested. In verse 28 he tells them that the Holy Spirit has made them overseers "to shepherd the church of God [τὴν ἐκκλησίαν τοῦ θεοῦ], which he obtained with his own blood." This is the text found in the NA/UBS and SBLGNT. What is remarkable about this is that it seems to present one of the clearest affirmations in Acts of Jesus's divinity. Even for Paul, this would be an

37. It is perfect if we set *A* to *a*, otherwise 2200 derives instead from 1891, which reads *b*.

38. Note the differing opinions on this in Metzger, *Textual Commentary*, 250; J. H. Ropes, *The Text of Acts*, vol. 3 of *The Acts of the Apostles*, part 1 of *The Beginnings of Christianity*, ed. F. J. Foakes Jackson and Kirsopp Lake (London: Macmillan 1926), 10; and Wachtel in ECM III/3, 6.

39. ECM III/1.1, 2 n. 2.

unusually direct affirmation of Jesus's divinity (though cf. Rom 9:5; Tit 2:13). On the other hand, to read the word "God" (θεός) as a reference to the Father produces a theology that sits uncomfortably with the rest of the New Testament and with early Christian theology, since the Father was not incarnate nor did he shed his blood.[40] Not surprisingly, we find a number of variants at this point. At Acts 20:28/40, the ECM records the following five:

a. θεοῦ – 01 03 0142 35* 104 218 383 441 459 614 621 629 1175 1292 1409 1490 1505 1509 1611 1642 1704 1831 1842 1890 2138 2147 2298 2412 2495 2652 2774 L60 L1825 L2010 Antioch Ath Bas Chrys ConstAp^{T} Cyr Dam Epiph PetrAl ThdMop **L:**V 58 189 **K:**Bms **S:**P$^{>}$H^{T}
b. *κυρίου καὶ θεοῦ* – 04C^{3} 5 61 88 467 619 623C 636 915 1162 1270 1297 1501 1595 1729 1827 1838 2805 L1188 **Byz** [35C 424C]
c. *κυρίου Ἰησοῦ καὶ θεοῦ* – 1837
d. *κυρίου Ἰησοῦ* – 2243
e. *κυρίου* – P41 P74 02 04* 05 08 044 33 94 180 181 206 228 307 429 431 436 453 522 610 623* 630 945 996 1678 1735 1739 1751 1875 1884 1891 2344 2464 2818 AmAl Chrys ConstAp^{mss} Dam Did IrLat Thdrt **L:**5 50 51 54 **K:**SB **S:**H^{M}

Readings *c* and *d* obviously warrant little consideration because of their paltry manuscript support. Reading *b*, though attested in a large number of minuscules, looks to be a conflation of *a* and *e*, a feature not unknown in the Byzantine text. The external evidence for *a* and *e* is "singularly balanced," as Metzger puts it,[41] while *b* lacks even a single early witness. Matters are little better when we turn to internal considerations. In the first place, the two earliest readings are easily interchanged, given that only

40. For this reason, the variation involving the word order of *τοῦ ἅιματος* (*τοῦ*) *ἰδίου* bears directly on this question because it could be read either as God obtaining the church with "*his* own blood" or with "the blood *of* his own (Son)." For scholars who prefer the latter interpretation, see F. F. Bruce, *Commentary on the Book of Acts*, NICNT (Grand Rapids: Eerdmans, 1954), 416 n. 59; Darrel L. Bock, *Acts*, BECNT (Grand Rapids: Baker, 2007), 630. F. J. A. Hort also held this view but based it on the conjecture that an original *υἱοῦ* has been lost after *ἰδίου*; see the appendix in Westcott and Hort, *Introduction*, 98–100.

41. Metzger, *Textual Commentary*, 425.

a single letter distinguishes their typical *nomina sacra* forms: $\overline{\Theta\Upsilon}$ and $\overline{\mathrm{K}\Upsilon}$. Likewise, reading *b* could explain readings *a* or *e* if a scribe omitted words when his eye skipped between κυρίου and θεοῦ because of their similar endings.

When looking to more intentional causes, each of the three main readings can be explained by one or both of the others. We have already noted that one way to read the text has God the Father shedding blood, a notion that orthodox Christian scribes would strongly repudiate.[42] This would provide a reason to reduce "Lord and God" to "Lord" or to change "God" to "Lord."[43] On the other hand, the phrase "church of the Lord" (τὴν ἐκκλησίαν τοῦ κυρίου) occurs seven times in the Septuagint but never in the New Testament. "Church of God" (τὴν ἐκκλησίαν τοῦ θεοῦ), however, occurs in some form eleven other times in the New Testament, all in Paul's letters. So we can imagine that scribes might replace the uncommon with the common and the un-Pauline with the Pauline.

Given these arguments, it is not surprising that textual critics as far back as Karl Lachmann and down to the present have varied widely on this decision.[44] Today, reading *a* is found in the NA^{28}/UBS^{5} and SBLGNT and reading *e* in the THGNT, with reading *b* naturally preferred by the RP Byzantine edition. The question is whether genealogical coherence can contribute new evidence to help us solve the problem. With the default settings and Connectivity set to 10, the diagram for this passage is shown in figure 4.18.[45]

None of the readings has perfect coherence here. The three largest attestations (*a*, *b*, and *e*) all show multiple emergence. Reading *a* devel-

42. For a consideration of this cause, see Ehrman, *Orthodox Corruption of Scripture*, 236–38. For a thorough survey of the patristic evidence, see Charles F. DeVine, "The 'Blood of God' in Acts 20:28," *CBQ* 9 (1947): 381–408.

43. In the case of reading *b*, a single article governs both nouns so that they should, according to the Granville Sharp construction, refer to the same person (see Daniel B. Wallace, *Granville Sharp's Canon and Its Kin: Semantics and Significance*, Studies in Biblical Greek 14 [New York: Lang, 2009], 233–37). In other words, reading *b* shares the same prima facie theological problem with *a*.

44. See the survey in DeVine, "Blood of God," 392–95.

45. We should note that the Acts interface defaults to 5 for Connectivity, since the editors felt that "a more cautious approach is appropriate" (ECM III/3, 2). We have used 10 as our default throughout in order to maintain consistency in our examples.

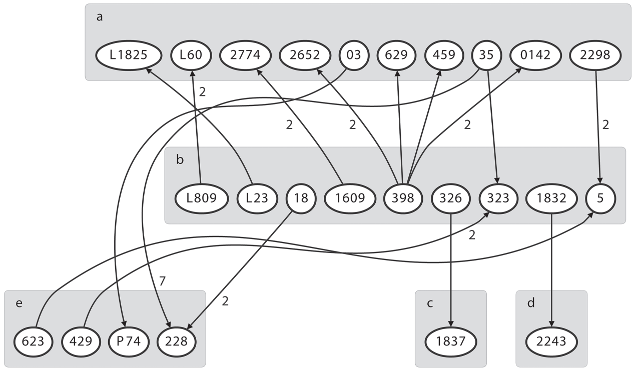


Fig. 4.18. The Coherence at Variant Passages diagram from the CBGM for Acts 20:28/40

ops from *b* on multiple occasions, consistent with the omission mentioned above. Meanwhile, reading *b* shows signs of conflation in 5 and 323, just as expected. Reading *e* may have developed from *b* in the case of 228, but its emergence from *a* in the case of P74 would be hard to explain transcriptionally. However, a close look at this diagram shows something missing that was present in all the textual flow diagrams from the Catholic Letters: the *A* witness or initial text. This is because the default settings for Acts show us diagrams without this important but hypothetical witness. To study this variation more fully, we will want to add it back in, being sure to set the *A* witness to each of our three main readings in order to see the full range of possibilities.

If we add the *A* witness to the diagram and set *A* = *a*, there is no real change (fig. 4.19). *A* is now the ancestor for P74 and 5, instead of 03 and 2298, respectively. But since *A* has been set to the *a* reading, the net change to coherence is zero. However, if we set *A* = *b* or *e*, then the coherence improves for the witnesses of those readings. In the case of *A* = *b*, the coherence for *b* is actually perfect (fig. 4.20), and when *A* = *e*, the coherence is still quite good, with only one instance of *b* leading to *e*, in the case of 18 → 228 (fig. 4.21).

What these diagrams suggest is that we may need to reconsider whether reading *a* is actually the best choice for the initial text. No matter what reading we set as the initial text, reading *a* is seen developing multiple times from *b* likely by accident, as explained above. Whatever the case, the genealogical coherence, when combined with transcriptional evidence, slightly favors reading *e*, although we should not dismiss reading *b*

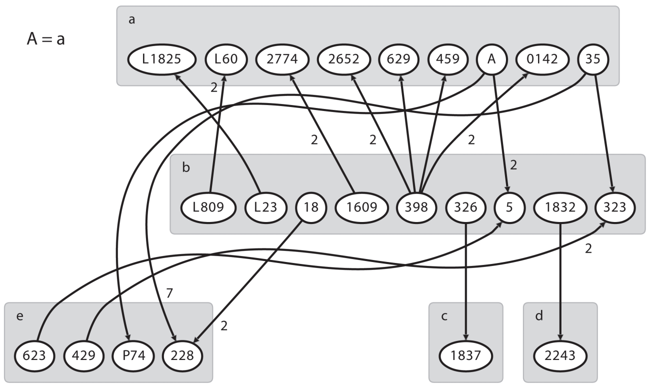


Fig. 4.19. Coherence at Variant Passages diagram for Acts 20:28/40 with *A* = *a*

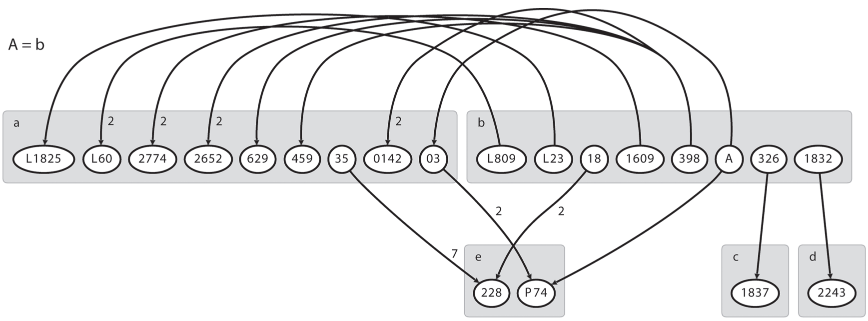


Fig. 4.20. Coherence at Variant Passages diagram for Acts 20:28/40 with *A* = *b*

as an obvious conflation; instead, it could explain the rise of both readings *a* and *e*, a possibility now reinforced by the genealogical coherence. In the end, a decision will need to rest on more than just the CBGM data, but the genealogical coherence does provide some welcome additional evidence to what all agree is a difficult decision.[46] At the very least, it provides evidence to challenge reading *a* as the initial text.

46. It is surprising that this variation does not receive a diamond in the ECM. It was given a C rating in the UBS[4] that is retained in UBS[5].

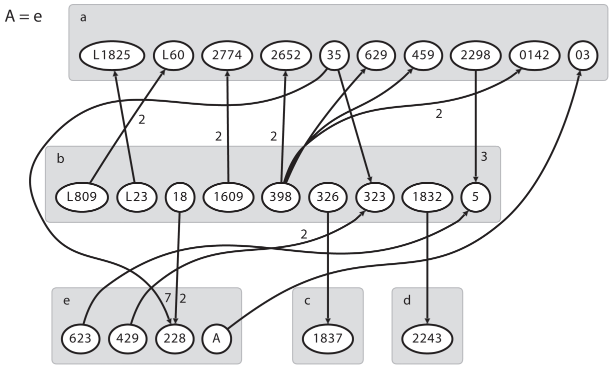


Fig. 4.21. Coherence at Variant Passages diagram for Acts 20:28/40 with *A* = *e*

4.4. Limitations

If these examples show some of the promise of genealogical coherence, it is important to mention several limitations. This will keep us from abusing the data or from following the arguments of those who do.

4.4.1. Genealogical Coherence Is Usually Relative

To repeat a point made earlier, the quality of genealogical coherence is often relative. It is relative from one attestation to another and also relative within an attestation. It is relative between attestations because, as with all textual criticism, we are *comparing* readings. What this means practically is that we should never ask whether an attestation has *strong* or *weak* coherence on its own. Instead, we always want to ask whether it has *stronger* or *weaker* coherence than the other reading(s). If we do not do this, we could be ignoring evidence, evidence that might otherwise challenge our own preconceptions. So, we should always check the coherence of all the main attestations in a variation unit. In many cases, this also means checking the coherence at a passage by testing different readings as the initial text. Again, this allows coherence to work as a check on our own predispositions.

But aside from coherence *between* attestations, we also want to consider the relative quality of coherence *within* an attestation. This means keeping an eye on the pregenealogical coherence percentages that underlie the textual flow diagrams. This can be done in several ways. In the Acts version of the CBGM, this is easily done by clicking on a witness

number and looking at the Relatives popup. This will immediately show us the "genealogical context" for that witness and whether there are other close potential ancestors that are not shown in the textual flow diagram but that nevertheless could be good candidates as the source. Depending on the variants in question, we may decide to ignore the diagram, knowing that it can only give us a much-simplified picture of the overall coherence that exists behind the scenes. In the CBGM for the Catholic Letters, the best way to do this is using the Show Table link in the Coherence in Attestations tool. In Acts, one need only click on a witness number to see its closest potential ancestors. Knowing the pregenealogical coherencies behind the diagram allows us to see where the choice between various potential ancestors is negligible. In such cases, we can ignore the diagram itself and follow the larger data set behind it, taking into account, of course, the nature of the variants themselves.

4.4.2. A Textual Flow Diagram Is Not a Traditional Stemma

The fact that there is always far more genealogical data than is shown in the textual flow diagrams brings us to our second caution: a textual flow diagram is not a stemma. Textual flow diagrams reduce and simplify the total genealogical picture, somewhat like a map of the London Underground. They are very good for studying coherence at a point of variation, but they are not good for studying the history of the text on a larger scale. Because a textual flow diagram usually connects each witness with *one* potential ancestor and does so by agreement whenever possible, we need to resist the temptation to interpret it as a traditional stemma, giving us a map of the text's historical development.[47]

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47. As David C. Parker does, for example, with a textual flow diagram for James in his otherwise excellent book *An Introduction to the New Testament Manuscripts and Their Texts* (Cambridge: Cambridge University Press, 2008), 307. At best, a textual flow diagram for an entire corpus such as the one Parker refers to may shed some light on the textual history, but its simplified nature means that such investigations are best done using the global stemma instead (see ch. 5, below).

4.4.3. The Process Still Requires Practice and Skill

Finally, as with pregenealogical coherence, genealogical coherence is built on and, indeed, works best in tandem with our accumulated knowledge about the transmission of the text, the tendencies of scribes, and the history and theology of the New Testament writers. This is not to say, of course, that genealogical coherence can never challenge what we think we know of these things. But it is to say that genealogical coherence itself is one type of evidence, and it needs to be integrated with other types of evidence. As with so much in textual criticism, the best way to hone the use of genealogical coherence is through practice. Our hope is that this chapter has provided the introduction needed to do that.

4.5. Conclusion

This chapter has introduced the concept of genealogical coherence in the CBGM, particularly its application in textual flow diagrams. We have introduced the main settings available for these diagrams both for Acts and the Catholic Letters. Most importantly, we worked through a number of examples to illustrate how to use it. In some cases, we saw that this new type of evidence can challenge our old assumptions, as in 1 Pet 4:16 and Acts 1:26. In another case, 2 Pet 3:10, we saw that the genealogical coherence is too closely balanced to be decisive. We also looked at how genealogical coherence can shed light on the text's development (as in 1 John 5:6), although several scenarios are often possible and final decisions must rest on additional evidence (as in Acts 20:28). Finally, we discussed three limitations of genealogical coherence that need to be kept in mind.

4.6. Key Terms

- attestation
- connectivity
- genealogical coherence
- potential ancestor
- textual flow diagram

5
The Global Stemma

This chapter introduces the global stemma and shows how it can be used to sharpen our understanding of how the Byzantine text developed.

The previous two chapters have focused on aspects of the CBGM that are especially useful for studying particular variation units. In this chapter we step back and consider how the CBGM gives us the "big picture" that results from all our individual decisions: the global stemma. We will explore how this final, summarizing stemma is produced, show how it can be used to study the text's historical development, and, of course, consider some limitations. It may be useful for the reader to rehearse what we learned in chapter 2, where we introduced the three types of basic stemmata used in the CBGM, including the global stemma, which we will now consider in more depth.

5.1. The Basic Concept

The global stemma can be thought of as the final step in the CBGM because it builds on all the work that has been done before. The global stemma is *the simplest hypothesis about how the text of our manuscripts developed*. It is said to be a *global* stemma because it accurately reflects all the decisions in the local stemmata. Every connection in the local stemmata corresponds to a connection in the global stemma; none is left out. It thus provides a comprehensive picture of the editors' own decisions, and its value lies precisely in this comprehensiveness.[1] It allows the user of the CBGM to see

1. As Gerd Mink says, this feature of the global stemma gives it an advantage over an "exclusively statistical approach" ("Introductory Presentation" 54).

all the implications of his or her own decisions at once. It also provides a valuable starting point for asking historical questions about how the New Testament text changed and developed over time.

However, it is important to note that, although the global stemma can be thought of as the *final* step in the CBGM, it is not necessarily a *required* step. The CBGM's other tools, especially the textual flow diagrams, can be used without it. In fact, this is the case for both Acts and the Catholic Letters. To date, no complete global stemma exists for either corpus, yet the CBGM has been used to edit both.[2] The reason one can do this is because the global stemma is more a reflection of the editors' specific textual decisions than a tool used to make them. In addition, the software needed to construct the global stemma (or portions of it) exists only in Germany, requiring the participation of the staff at INTF.

That being said, this chapter will explore several portions of the global stemma for the Catholic Letters and illustrate their value. We hope that future work will produce larger portions of the global stemma that will illuminate further questions. To give a picture of what a global stemma looks like, an early draft of the topmost portion for the Catholic Letters is shown again here in figure 5.1.[3]

The dashed gray lines (e.g., *A* → 424) show very weak influence that may turn out to be superfluous. The thick black lines (e.g., *A* → 03) show influence that is stronger than the standard lines (e.g., 03 → 04), and the black dashed line connecting 025 and 468 means that there is no predominant direction of influence either way. In chapter 2, where we first discussed this stemma (see fig. 2.7), we noted the level of contamination it shows (a stemma without contamination would look like figure 2.1, where the text of each witness is derived from a single ancestor). This stemma is, of course, not a historical map, since it relates texts rather than manuscripts and many witnesses have been lost. But it does give a sense of how the text of each manuscript can be explained in relationship to other texts, texts that ultimately descend from the initial text.

2. Work on the global stemma for Acts is set to begin in 2017, according to Klaus Wachtel (pers. comm.).

3. This is taken from Mink, "Introductory Presentation," 562. In Mink's original, colored lines are used to show varying levels of influence between ancestors and descendants.

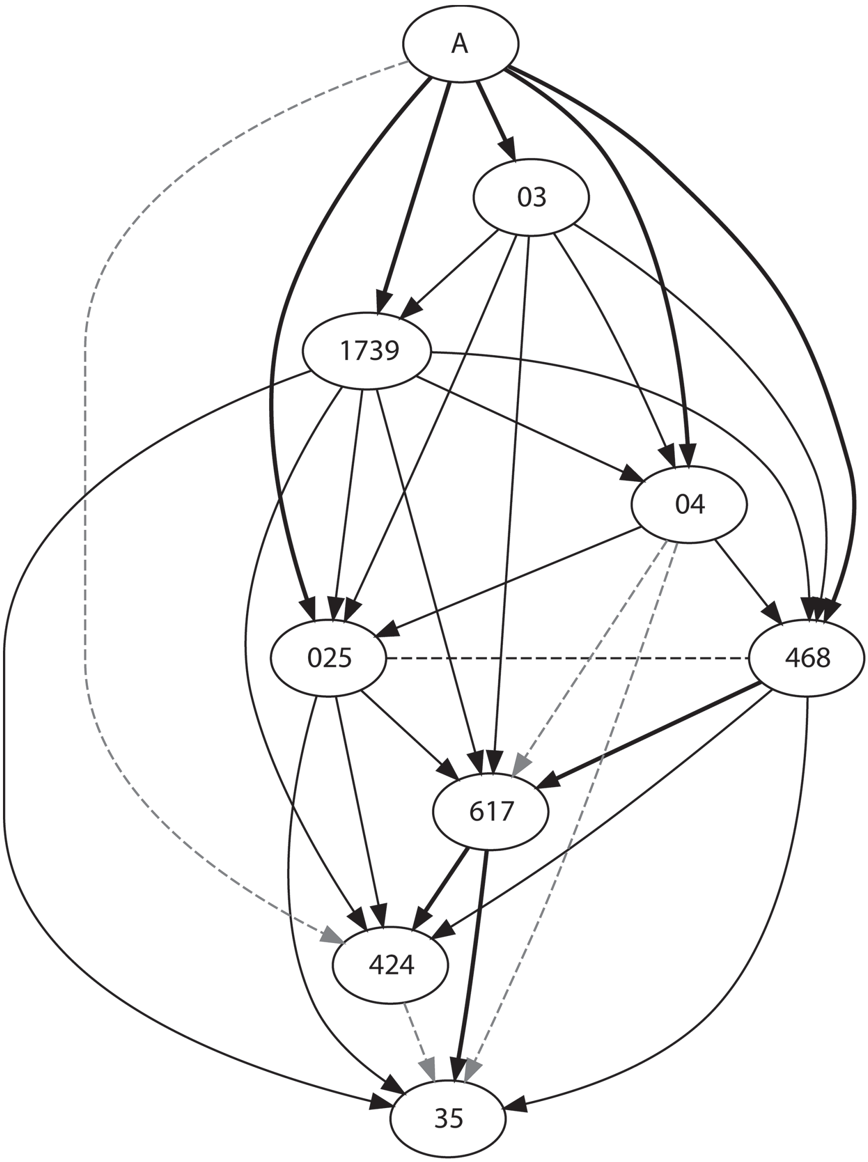


Fig. 5.1. The top of the global stemma for the Catholic Letters

5.2. How the Global Stemma Is Constructed

The current way to construct the global stemma is probably the most labor-intensive aspect of the CBGM, and this is the main reason that no complete global stemma yet exists. There is a way, however, to automate its construction that we will explore below. We think this approach holds real promise for significantly speeding up the process.

To understand how the global stemma is made, we need to recall that each witness in the CBGM may have many *potential* ancestors. Witness 01, for example, has forty-five potential ancestors in the Catholic Letters, including the initial text. Obviously, a stemma connecting all of these to 01 would be comprehensive but not useful. The challenge for the CBGM is to narrow these potential ancestors down to the bare minimum without sacrificing any relationships from the local stemmata. This narrowing is what is meant when we say that the global stemma is the *simplest* overall hypothesis of witness relationships. Once the potential ancestors have been reduced to this bare minimum, the resulting ancestors are known as *stemmatic* ancestors, meaning that they are necessary for the global stemma.

These stemmatic ancestors are found by way of *sub*stemmata. They are *sub-* in that they form the foundation for the global stemma. In fact, they *are* the global stemma once they are brought together. Visually, a substemma is merely a two-tiered genealogy that connects one witness with a set of ancestors as in figure 5.2, which shows all the potential ancestors for 35.

As the number of potential ancestors for a witness increases, so does the number of its possible substemmata. For witness 35, for example, there are 255 different ways we could combine its potential ancestors into a substemma.[4] With a witness such as 1611, which has eighty-six potential ancestors, the number of available substemmata balloons to more than one septillion—a one followed by twenty-four zeros!

With so many possible substemmata, it is essential to have criteria with which to choose the best one. In the CBGM, the "principle of parsimony" governs the search for the simplest overall hypothesis. The following four basic assumptions about the normal conditions of the New Testament textual transmission are the corollary of the principle of parsimony:

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4. The formula again is 2^n-1, where n is the number of potential ancestors. See Mink, "Introductory Presentation," 494.

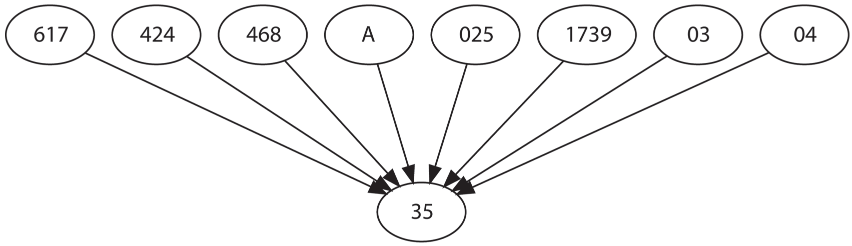


Fig. 5.2. One of many possible substemmata for witness 35

1. Scribes typically copy their sources with fidelity so that ancestors and descendants are closely related.
2. When scribes diverge from their primary source, it is more often because they have access to another source (normally a manuscript) rather than because they have created a variant reading on their own.
3. Scribes use few rather than many sources.
4. Following from the first assumption, the sources for each witness will be those most closely related to it in terms of pregenealogical coherence.

It is important to emphasize that these assumptions are not simply pragmatic but are based on the CBGM data themselves. The overall pregenealogical coherence seen in the CBGM shows a high level of agreement among our New Testament manuscripts, an agreement without which a parsimonious hypothesis would not be possible. The most natural explanation of this level of agreement is that scribes generally copied their exemplars well, that they generally avoided inventing new readings, and that they generally kept the number of sources small.

The most important word in that last sentence is *generally*. The assumptions are not absolute; they all allow for exceptions. Obviously, scribes did not *always* copy their sources with fidelity. If they had, you would be outside enjoying the sun, not reading this book! Nor is it true that scribes always diverged from their exemplar using another source rather than creating it on their own. The very first time each individual variant arose in the tradition, it did so without reference to another source in the tradition. Moreover, we can be sure that certain easy-to-make mistakes such as the addition or omission of an article or conjunction were made repeatedly without reference to other sources. All four assumptions allow for exceptions where appropriate. In some cases, the assumptions even conflict with

each other, as we will see. What is important about the assumptions is that they guide us in choosing between competing substemmata.[5]

Here is how the assumptions are applied. If scribes wanted to copy faithfully, if they used few rather than many sources, and if those sources are closely related, then it follows that the best substemma for each witness is the one that contains (1) the fewest number of potential ancestors with (2) the least number of unexplained variants. Here, an *unexplained variant* is simply one that is not found in any of the ancestors or that is not derived from them in a local stemma. Whenever a substemma can explain all the variants in the descendant, the substemma is said to be optimal. By leaving no variants unexplained, optimal substemmata ensure that the global stemma will be fully consistent with all the local stemmata.

The process of optimizing a substemma involves two steps, one performed by the computer and one by the editor.[6] In the initial step, the computer searches for all the possible substemmata for a witness, then ranks them based on how well they explain the text of the descendant. From this selection, there may be several substemmata that explain all the variants; it is then up to the editor to take the final step of choosing which of these is preferable based on a firsthand examination of specific variant relations in the substemma. We will describe the various ways variants can be explained shortly. To illustrate the process, a small selection of the possible substemmata for witness 35 is provided in table 5.1.[7]

The first column lists the ancestors in the substemma (the sequence depending on how many readings each ancestor explain); the second simply lists the number of them. The fewer, the better. The third column shows the number of readings shared between 35 and the ancestors in the given substemma. The more, the better. The fourth column shows the readings derived from the ancestors according to the local stemmata. The final

5. This is, of course, an application of Occam's razor, in which gratuitous elements are removed from a hypothesis.

6. The process is explained in Mink, "Contamination, Coherence, and Coincidence," 189–201. A longer but somewhat clearer explanation is given in his "Introductory Presentation," 485–560.

7. These data reflect the CBGM version 1.0. The complete list of substemmata for 35 was provided by Klaus Wachtel and is more extensive than the selection of the same data given in Mink's "Introductory Presentation," 495. In table 5.1 and figure 5.3 the witnesses are listed, from left-to-right, according to how high their pregenealogical coherence is with 35.

Table 5.1. Six substemmata for witness 35

Substemma Ancestors	Number of Ancestors	Agreements	Derivative	Unexplained
617 424 468 025 1739 04	6	3,013	27	0
617 468 025 1739 04	5	3,012	28	0
617 468 025 1739	4	3,010	30	0
424 468 1739	3	3,002	35	1
424 1739	2	2,985	40	8
617	1	2,924	56	50

column lists the number of variants that cannot be explained in either way by the witnesses in that substemma. Again, fewer is better in this column. Only substemmata with a zero in the final column are considered optimal. Only these substemmata will fully represent the place of witness 35 in all the local stemmata. For witness 35, there are three such substemmata.

At this point, two of the principles of parsimony are in conflict, so we must decide whether to give weight to the first (scribes generally copied with fidelity) or the third (scribes used few rather than many sources). Mink prefers to make this decision through a careful process that involves isolating specific ancestors in the substemma and deciding whether their unique contribution warrants their inclusion or not.

In the case of 35, Mink examined the first substemma (617 424 468 025 1739 04) and found that the contribution of 424 and 04 was insignificant. Witness 424 contributes only one agreement in the substemma, the omission of the article before *οὐρανοί* at 2 Pet 3.10/18. Given the phonetic similarity of the article with the preceding relative ᾗ, Mink concluded that the agreement is coincidental rather than genetic (pers. comm). This being the case, the omission of the article could easily have derived from any one of 35's other potential ancestors, all of which have the article here. The same conclusion was drawn about the two unique agreements between 35 and 04; both had ready explanations using other ancestors in the substemma. As a result, both 424 and 04 were safely removed from the substemma. The other ancestors all contain so many agreements with 35 or agreements so unlikely to be coincidental that they needed to be retained. This is what is meant by variants being *explained* by a substemma. The resulting optimal substemma is shown in figure 5.3, and this is what will be incorporated into the final global stemma.

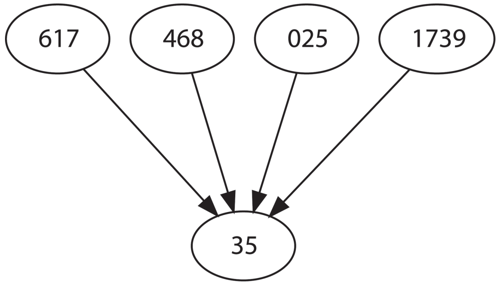


Fig. 5.3. Mink's preferred optimal substemma for 35

Clearly, this process of examining specific ancestors in each substemma is quite laborious. However, careful readers may have noticed a simpler way to achieve the same result in our example above. In the case of 35, the very same substemma could have been found immediately if we simply looked for the substemma with (1) the smallest number of ancestors with (2) no unexplained variants from table 5.1 (i.e., row 3: 617 468 025 1739). Although Mink prefers not to automate the process in this way lest important relationships be overlooked, we have used this approach in our discussion below, and we think the results show promise. Certainly it is worth doing as a first pass at the global stemma.

5.3. Example: The Origin of the Byzantine Text

As an example of the value of the global stemma, we will consider the origins of the Byzantine text in the Catholic Letters and their relationship to a well-documented group of Greek manuscripts known as the Harklean group.[8] To understand the relationship between these two, we need to explain some of the story behind the Harklean group and why it has been a rich source for understanding the textual history of the Catholic Letters.

The Harklean group is so named because its text shows remarkable affinity to the Syriac translation done by Thomas of Harkel, a Syrian bishop

8. For the full study, see Gurry, *Critical Examination*, ch. 5. For a pioneering study using computer methods on the Harklean group, see Matthew Spencer, Klaus Wachtel, and Christopher J. Howe, "The Greek Vorlage of the Syra Harclensis: A Comparative Study on Method in Exploring Textual Genealogy," *TC* 7 (2002), http://purl.org/TC/v07/SWH2002/.

who was forced to flee to Egypt near Alexandria. While there, he completed a remarkable translation of the New Testament into Syriac in 616 CE. The details are recorded in his rich colophons to his work.[9] Thanks to Thomas's relentlessly literal translation style, it is often possible to identify his underlying Greek text with unusual confidence. Better still, it happens that a group of Greek manuscripts has been identified that matches Thomas's translated text extremely closely.[10] By comparing these Greek manuscripts with Thomas's Syriac, we can securely place most of their text in the early seventh century in Egypt. In terms of date, this puts this text hundreds of years earlier than the date of the Greek manuscripts themselves, which all date between the eleventh and sixteenth centuries.

What makes this remarkable connection relevant to the origin of the Byzantine text is that Thomas's text is distinctly un-Byzantine in the Catholic Letters, a feature that sets it apart from the rest of his translation. Leveraging this fact, Klaus Wachtel has argued that Thomas's translated text in the Catholic Letters is actually a precursor to the mature Byzantine text that we find in our ninth-century minuscules.[11] Thus, in contrast to the theory that the Byzantine text is the result of a fourth-century recension, as argued famously by B. F. Westcott and F. J. A. Hort in the nineteenth century, Wachtel argued that it is the result of a centuries-long process of accumulating smoother, more acceptable readings from earlier periods. In the Catholic Letters, Wachtel identified three distinct phases of Byzantine development: one in the third–fourth centuries, one in the fifth–sixth, and a final phase in the ninth century marked by the transition to minuscule

9. For the full colophon for Acts and the Catholic Letters, see Joseph White, *Actuum Apostolorum et epistolarum tam catholicarum quam paulinarum, versio Syriaca Philoxeniana*, 2 vols. (Oxford: Clarendon, 1799–1803), 1:274–75. For introductions to the Harklean Syriac, see Peter J. Williams, "The Syriac Versions of the New Testament," in Ehrman and Holmes, *The Text of the New Testament*, 152–55; and Bruce M. Metzger, *The Early Versions of the New Testament: Their Origin, Transmission, and Limitations* (Oxford: Clarendon, 1977), 68–75.

10. This group was identified and described by Barbara Aland in *Das Neue Testament in syrischer Überlieferung I: Die großen Katholischen Briefe*, ed. Barbara Aland in connection with Andreas Juckel, ANTF 7 (Berlin: de Gruyter, 1986), 41–90.

11. See Klaus Wachtel, *Der byzantinische Text der katholischen Briefe*, ANTF 24 (Berlin: de Gruyter, 1995), esp. 194–98; a brief summary is also given in Spencer, Wachtel, and Howe, "Greek Vorlage."

script.[12] Importantly, these early roots for the Byzantine text mean that it may independently preserve an initial reading, as we saw in 1 Pet 4:16 and Acts 1:26 in the previous chapter.

Thomas's Syriac translation is what takes center stage in Wachtel's middle phase. Given Thomas's concern for accuracy, Wachtel concludes that he must have chosen a text well accepted in the Greek-speaking church in Egypt, where he worked. Thus Wachtel suggests that Thomas's text in the Catholic Letters is less Byzantine, *not* because he just happened to choose an idiosyncratic text, but rather because only here had the Byzantine text not yet reached its full maturity.[13] Wachtel's initial work on the origins of the Byzantine text was done using only the data of the NA[27] and the *TuT* volumes, so in what follows we will show how the CBGM's global stemma and the data behind it can shed further light on the question. To do this, we will construct a portion of the global stemma for the Harklean group in the Catholic Letters.[14]

The partial global stemma offered here is based on the first version of the CBGM, since this is the only data set that the current substemmata software can use.[15] It is unlikely that the stemma would change dramatically if data for the second version were used. The novel approach mentioned already was used to optimize the lists of substemmata. To do so, we preferred the substemma for each witness that resulted in (1) the smallest number of unexplained readings from (2) the smallest number of ancestors resulting in (3) the largest number of readings explained by agreement. This approach significantly reduces the effort needed to produce the global stemma without any great risk of including superfluous ancestors in the results. With an optimized substemma for each witness constructed, it is simply a matter of putting them all together. Figure 5.4 shows the resulting portion of the global stemma for the Harklean group.

In this stemma, the Harklean group witnesses are contained within the box and are shaded gray (e.g., 1611, 2200). Witnesses with a Byzan-

12. Wachtel, *Der Byzantinische Text*, 197–98.

13. Ibid., 189; Spencer, Wachtel, and Howe, "Greek Vorlage," §3.

14. For the definition of the group members, we follow Spencer, Wachtel, and Howe, with the exception of a few, such as 2495, for which substemma data was not obtained.

15. Our thanks to Klaus Wachtel for providing the lists of substemmata, which were then optimized.

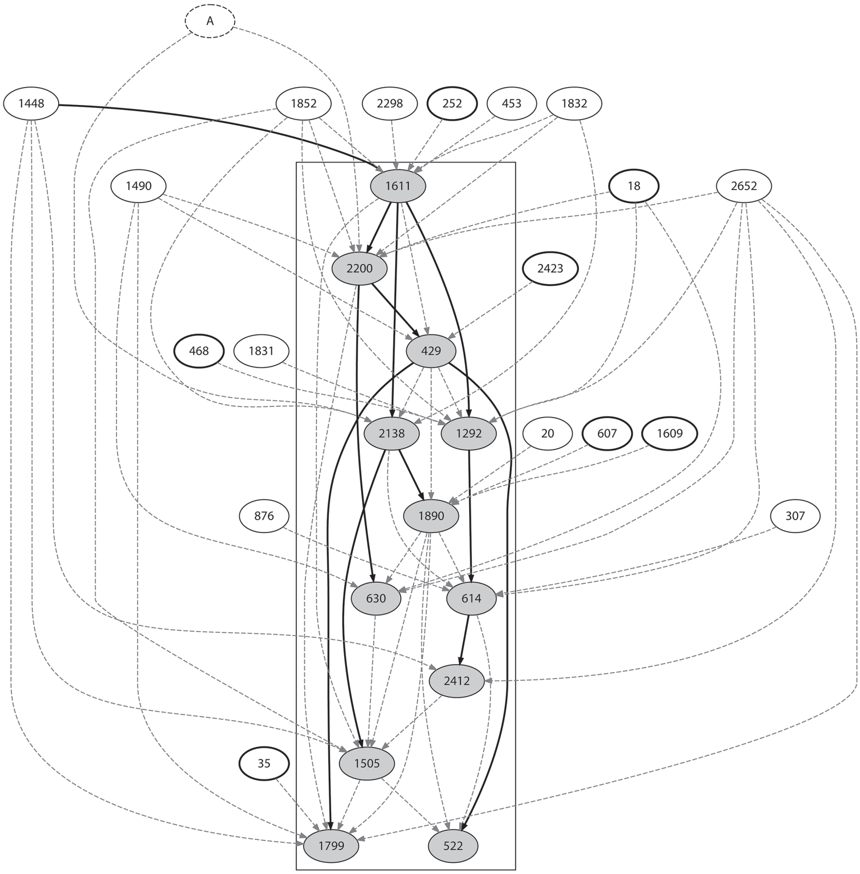


Fig. 5.4. The global stemma for the Harklean group in the Catholic Letters

tine text are circled in bold (e.g., 252, 18).[16] Solid lines with arrows (e.g., 1448 → 1611) indicate the most significant source of textual influence, dashed lines with arrows, less significant influences.

Not surprisingly, the strongest influence for most members of the Harklean Group are other members of the group itself. This confirms that

16. A witness is considered Byzantine if it is found in at least three of the five lists of Byzantine manuscripts in the ECM IV^{2}/2, 10–18. Witness 1890 is listed as Byzantine outside of James and 1 Peter.

we are dealing with a unique set of witnesses. More important for our question here are the Byzantine witnesses. The main external influence on the Harklean group does not come from the Byzantine witnesses but rather from 1448, which is not Byzantine. The slight influence we do see from Byzantine witnesses is not surprising, given that the Harklean group of witnesses is made up of manuscripts copied in the eleventh century and beyond. Since the Byzantine text was dominant in that period, we should expect some Byzantine readings to have seeped into the text of these manuscripts. In fact, what is surprising is how little Byzantine influence there actually is. What we have here is an example of a text that was remarkably well preserved across hundreds of years. In the case of 522, for example, a manuscript that dates to the sixteenth century, we have virtually the same text that Thomas used in the early seventh century preserved with only minor modification across nearly a millennium.

The global stemma, however, appears at odds with Wachtel's conclusion about the Byzantine text in one respect. In his reconstruction, the Byzantine text of the ninth century is *descended from* the text translated by Thomas and attested by the Harklean group. Although Wachtel does argue for a second ancestral source besides the Harklean, it is surprising that the Harklean group does not appear as ancestral to many Byzantine witnesses in the CBGM. Currently, not one of the ECM's "pure" Byzantine witnesses registers as a descendant of 1611, the head of the Harklean group. Moreover, none of the Harklean witnesses is a potential ancestor for 35, which is one of the defining Byzantine witnesses in the ECM. As we saw above, none of the ancestors in the optimal substemma for 35 is in the Harklean group.

This raises the question of how best to interpret the conflicting data between Wachtel's study and the results of the CBGM. The best solution, we think, is that the text of the Harklean group is a *sibling* of the Byzantine text rather than one of its ancestors. This would mean that the two have a shared ancestor. We can see this by examining the relationship of their two key witnesses, 35 and 1611, in closer detail. If we first compare each one to the initial text, we see that 35 agrees with it 91.1 percent of the time and 1611 only 88.4 percent. This means that 35 has preserved the initial reading more often than 1611 has. If we go one step further and compare the disagreements between 35 and 1611 in places where neither witness has the initial text, we find that a direct, historical relationship is unlikely.

Table 5.2. A comparison of 35 and 1611 in places where both disagree and neither has the initial text

35 → 1611	35 ← 1611	No Direct Relationship	Unclear Relationship
9	4	18	9

Witness 35 has the prior reading nine times, 1611 four times. But outnumbering both are the eighteen times that the two are indirectly related (in nine cases, the editors were unsure). What this suggests is that Wachtel's view of the development of the Byzantine text needs slight revision in the Catholic Letters. In his original study, Wachtel simply assumed that the Harklean text was a direct ancestor to the Byzantine text because the former was attested earlier (in Thomas's seventh-century Syriac) than the latter (in the ninth-century and later minuscules).

Considering the results here, it seems best to explain the relationship as one of *shared* ancestry rather than *direct* ancestry. The agreements between the Harklean witnesses and Byzantine witnesses are not, it seems, evidence that the Harklean text is ancestral to the Byzantine text but rather that the two have a common, shared ancestor. The differences show that the Harklean witnesses have diverged further from this shared ancestor than the Byzantine witnesses have.[17]

There are two important implications of this. The first is that we cannot assume that the later a text is attested the more corrupt it must be. In the case of the Byzantine and Harklean witnesses, the Byzantine is both attested later *and* is at the same time less corrupt overall. The Harklean, on the other hand, is attested earlier but has diverged further from the initial text—at least according to the ECM editors. The second implication that follows from this is that we should not be surprised if the Byzantine witnesses attest initial *readings* against earlier witnesses even if it remains true that their distinctive text *as a whole* is not attested until much later. The reason is that our Byzantine manuscripts have early roots, and this has put them in a position in some cases to preserve the earliest reading in isolation from the rest of the tradition, as Günther Zuntz suggested regarding

17. This picture fits quite well with Günther Zuntz's "stream of the tradition" for the Pauline letters printed in the back of his seminal study, *The Text of the Epistles*.

the Pauline corpus.[18] This is something all New Testament scholars will need to reckon with in the Catholic Letters—and beyond, if the same data hold true elsewhere.

In any case, this example illustrates the practical value of the global stemma. When carefully used, it can lead us to important historical conclusions about the text of the New Testament. When the global stemma for Acts is completed, it will surely raise further important questions that can be profitably pursued using the CBGM data and tools.

5.4. Limitations

The reader who has made it this far knows, of course, what is coming. If our example above has illustrated how the global stemma can benefit our study of textual history, it remains also to offer several important limitations of this tool as well. Here we give two.

5.4.1. The Global Stemma Is Not a Traditional Stemma

Textual critics, especially those working on classical texts, are quite familiar with the traditional stemma known as a *stemma codicum*, that is, a stemma of codices or manuscripts. The name already implies the most important difference between these traditional stemmata and the CBGM's global stemma. Where the former connects *manuscripts*, the latter connects their *texts*. The difference means that the global stemma can discard the date of the ink and papyrus (or parchment or paper) when relating texts in a way that a *stemma codicum* cannot. More importantly, this means that the global stemma cannot be read as telling us which *manuscript* was copied from which; it only tells us about textual influence. That means we cannot directly use the dates of manuscripts to date sections of the global stemma. In the case of the Harklean group, for instance, we would be quite wrong to think that 429 cannot have a text that has influenced the text of 1799 just because its manuscript is dated to the fourteenth century and 1799 to the twelfth or thirteenth century.[19] On the other hand, it would be absurd to conclude from the global stemma that the scribe of 1799 had codex 429

18. Ibid., 254. Cf. Michael W. Holmes, "Reasoned Eclecticism in New Testament Textual Criticism," in Ehrman and Holmes *Text of the New Testament*, 789.

19. The Revelation section of 429 is dated even later, to the fifteenth century (ECM IV^2/2, 6).

in front of him when he copied. This distinction between text and manuscript needs to be kept constantly in mind when we draw conclusions from the global stemma.

Another important issue is that the sequence of connections in the global stemma cannot be read as an ancestral tree from top to bottom, as in a traditional stemma. In a traditional stemma, we can safely assume that if *Z* descends from *Y* and *Y* descends from *X*, then *Z* is thus a descendant of *X*, too. In the global stemma, however, we cannot always assume this because of the effects of contamination. What we are getting at is the need to interpret the global stemma carefully by observing the data behind it as well.

5.4.2. The Global Stemma Requires Interpretation

Following from this last point, it should be clear that the global stemma must be interpreted. This may seem obvious, but it is worth stating because, like the textual flow diagrams used in the last chapter, the global stemma's crisp details can trick us into thinking that it is giving us history in "high definition." This is hardly the case. As we know from considering its construction, the global stemma remains a hypothesis, one that, at least in its graphic form, simplifies a great deal of genealogical data. This is in keeping with Mink's view that "the CBGM gives no immediate historical answers. Yet, the text historian (well acquainted with the rules and limitations of the method) should ask why the CBGM reveals a certain structure and what the historical scenario behind [it] may be."[20] We should not think of the CBGM as the final answer, certainly not as the only tool for studying the history of the text. Rather, as Wachtel explains, "The relative chronology of the development of text as shown by the global stemma can and will be put into relation with known historical data like the dates of the manuscripts carrying the textual witnesses, the dates of authors citing from the respective writings, and the dates of translations."[21] This is exactly what we have done with the Harklean group and the Byzantine text in this chapter.

20. Gerd Mink, "Some Notes on Dirk Jongkind's Paper 'Textual Criticism of the New Testament and the Coherence Based Genealogical Method: Some Critical Remarks' " (paper presented at INTF colloquium, Münster, 27 January 2014), 11–12.

21. Klaus Wachtel, "The Coherence Method and History," *TC* 20 (2015): 6, http://purl.org/TC/v20/TC-2015-CBGM-history.pdf.

In this case, the global stemma provides a valuable piece of the puzzle. Other times, however, we may not be so lucky. In those cases it may be that part of the global stemma is oversimplified and distorting, a feature to be expected, given that so many of our witnesses are lost.[22]

5.5. Conclusion

This chapter has explored the nature and use of the global stemma in the CBGM. We have considered what substemmata are and how they are optimized to form the global stemma that accurately incorporates all the data from the local stemmata. Following this, we looked at a new portion of the global stemma for the Catholic Letters involving the Harklean group of Greek witnesses. Using this, we were able to clarify the relationship of the Byzantine text and the text Thomas translated into Syriac in the early seventh century. Our use of the CBGM found that they are not related as parent and child but rather as siblings of an older parent text. This supports the view that the Byzantine text has early roots in the Catholic Letters and deserves consideration even in places where it diverges from our earliest witnesses. Finally, we considered two important limitations of the global stemma that need to be kept in mind when using it for studying the textual history of the New Testament. In the next chapter, we will conclude our introduction to the CBGM by noting some further cautions and suggesting ways to further improve it.

5.6. Key Terms

- Byzantine text
- colophon
- optimal substemma
- *stemma codicum*
- global stemma

22. Note that this oversimplification applies to a traditional *stemma codicum* as well. As the classicist Martin West writes, "Any stemma that we construct for the manuscripts of a classical author is liable in the same way to be an oversimplification of the historical reality" (*Textual Criticism and Editorial Technique Applicable to Greek and Latin Texts* [Stuttgart: Teubner, 1973], 35).

6
Limitations and Future Improvements

This chapter serves two functions. First, it considers a few overall limitations of the method that were not covered in previous chapters. The second function is to encourage researchers to consider ways that they might improve and develop the CBGM. To this end, we offer a few of our own suggestions.

The last three chapters detailed the promise of the CBGM for reconstructing the initial text and for studying the history of its development. This chapter steps back to consider some of the problems that history presents when we try to piece together the past. These problems are not, of course, unique to the CBGM. They plague all efforts to recover the past. But they are important to remember in this context, lest we claim too much for the CBGM's results. Following this, we mention some ways we think the CBGM could be improved in future iterations. These are not the only ways the method can be improved, but we mention these in the hope of spurring on others to develop the method.

6.1. Limitations

Previous chapters have mentioned several limitations specific to the CBGM. For example, we warned against treating textual flow diagrams as stemmata and against thinking of the global stemma as relating manuscripts rather than their texts. In the case of coherence, we stressed that both pregenealogical and genealogical coherence are one piece of the evidential puzzle and need to be used in concert with everything else we know.[1] In this, the CBGM is like any tool: it takes skill to use well. This is

1. For an example of using the CBGM as a tool to explain textual changes and

the point at which we can no longer resist quoting the inimitable classicist A. E. Housman. In a classic essay on textual criticism, Housman concludes with these words:

> To *be* a textual critic requires aptitude for thinking and willingness to think; and though it also requires other things, those things are supplements and cannot be substitutes. Knowledge is good, method is good, but one thing beyond all others is necessary; and that is to have a head, not a pumpkin, on your shoulders, and brains, not pudding, in your head.[2]

The following limitations are really limits of our current knowledge or of studying the past in general, so they apply far beyond the CBGM. We give them here because we know that new methods, especially ones that require a significant investment to master, often tempt us to claim too much for them. Here we remind you that the CBGM, despite its significant advances, is not a magic wand that will solve all our text-critical problems.

6.1.1. History Is Selective

As Richard Evans reminds us, our historical knowledge is always contingent on "the extent to which it is possible to reconstruct the past from the remains it has left behind."[3] What is left behind are fragments, chance survivals from the past—we are trying to piece together the puzzle with only some of the pieces. In the case of textual criticism, this means that we have only a selection of the manuscripts that once existed, and sometimes incomplete manuscripts. Although New Testament textual critics are used to straining under the number of manuscripts that we possess, there must be an even greater number that are forever lost. For the CBGM, the selection we are working with is made still smaller in that the method in its present application incorporates about one-third of our *extant* Greek

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to evaluate the influence of so-called orthodox corruption, see Wasserman, "The Coherence Based Genealogical Method," 206–18.

2. A. E. Housman, "The Application of Thought to Textual Criticism," *Proceedings of the Classical Association* 18 (1922): 84; emphasis original; repr. in *Selected Prose*, ed. John Carter (Cambridge: Cambridge University Press, 1962), 131–50.

3. Richard J. Evans, *In Defense of History* (London: Granta Books, 1997), 110.

manuscripts.[4] The selection includes, to be sure, the most important and representative ones, but they are still a selection not only of what once was but even of what we now have. That fact must be born in mind.

Beyond this selection of *Greek* witnesses, the CBGM does not currently include any versional or patristic data. Their testimony can, of course, be used when constructing local stemmata, but after that point we cannot see them in the textual flow diagrams or the global stemma, nor can we compare them using pregenealogical coherence.

The significance of this selectivity of our evidence means that our textual flow diagrams and the global stemma do not give us a picture of exactly what happened. When we look at the global stemma, for instance, it is more like a watercolor painting of a great national park than a topographical map. We might be able to identify key landmarks from the watercolor, but we would not want to use it to find our way through the forest.

6.1.2. History Is Rarely Simple

A more far-reaching warning needs to be sounded about the CBGM's basic assumptions deduced from the principle of parsimony introduced in the last chapter. These assumptions, it will be recalled, are used to choose between competing substemmata when constructing the global stemma. The principle of parsimony is used, of course, in disciplines far beyond textual criticism and is more popularly known as Occam's razor. It states that, when faced with multiple hypotheses that explain the same data, we should prefer the simplest one.[5] Different methods define what constitutes *simplicity* differently. In the CBGM, these principles are helpfully based on what *scribes* are most likely to have done. This puts the CBGM on better footing than stemmatic methods that do not situate their notion of simplicity in relation to scribal culture.

4. There is no theoretical limit to the number of manuscripts to which the method can be applied. In his comprehensive study of 560 manuscripts in the Letter of Jude, Tommy Wasserman suggested that the ECM editors could test the validity of their selection of 134 manuscripts in Jude by comparing their global stemma to a global stemma for the complete manuscript tradition of Jude using the CBGM on his data. See Tommy Wasserman, *The Epistle of Jude: Its Text and Transmission*, ConBNT 43 (Stockholm: Almqvist & Wiksell, 2006), 29.

5. For a helpful study of the principle and its limits, see Elliott Sober, *Ockham's Razors: A User's Manual* (Cambridge: Cambridge University Press, 2015).

But even with this advantage, the CBGM faces the problem—as do all uses of parsimony for historical reconstruction—that history is made by complex and conflicted human beings who need not operate in the simplest way possible.[6] In the words of William Robins, "Scientific explanations strive to incorporate notions of predictability, probability, or falsifiability, but it is by no means clear that humanists seeking to understand complex products of human agency will find that a statistical inference about probability, or a deductive inference about parsimony, makes one account more compelling than another."[7] Put another way, "The hard problem is to explain why the fact that one theory is simpler than another tells you anything about the way the world is."[8] In the face of competing hypotheses, the parsimonious hypothesis is the best we can do; it contains less non-evidenced elements than competing hypotheses. But the "best we can do" is not necessarily the same as "most historically accurate." Unfortunately, such is the nature of all historical reconstruction. As Mink has said, "A hypothesis must never be confused with reality. If we know the reality, we need no hypothesis."[9]

6.1.3. Contamination Remains a Problem

Finally, it needs to be said that the CBGM, despite claims to the contrary,[10] has not resolved the problem of contamination. Contamination happens

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6. This same limitation applies to the so-called canons of criticism, or critieria used to evaluate variant readings (e.g., *lectio difficilior potior*): they are general rules deriving from observations about how scribes in general behaved and are therefore useful as long as we remember their limitations and apply them with caution. To return to Housman: "every problem which presents itself to the textual critic must be regarded as possibly unique" ("Application of Thought," 69).

7. William Robins, "Editing and Evolution," *Literature Compass* 4 (2007): 114.

8. Sober, *Ockham's Razors*, 2. See the similar point in Bengt Alexanderson, *Problems in the New Testament: Old Manuscripts and Papyri, the New Coherence-Based Genealogical Method (CBGM) and the Editio Critica Maior (ECM)*, Acta Regiae Societatis Scientiarum et Litterarum Gothoburgensis, Humaniora 48 (Göteborg: Kungl. Vetenskaps- och Vitterhets-Samhället, 2014), 91. Unfortunately, Alexanderson seriously misrepresents the CBGM in his attempt to evaluate the method.

9. Mink, "Some Notes on Dirk Jongkind's Paper," 11.

10. See David C. Parker, *Textual Scholarship and the Making of the New Testament: The Lyell Lectures* (Oxford: Oxford University Press, 2012), 84.

whenever a text is created from more than one source (see ch. 2 above). It creates problems for genealogical methods based on the "common error" principle. The CBGM tries to address these problems by relating texts rather than manuscripts, by allowing for multiple ancestors, and by using coherence to detect where contamination has happened. However, there are still cases where contamination can go undetected in the CBGM, with the result that proper ancestor-descendant relationships are inverted.[11]

Thus far, few clear cases of this in the CBGM have been identified, but, then again, identifying them would be quite difficult unless we already knew the relationship of texts in some way outside the CBGM.[12] The relationship of the Harklean text and the Byzantine text has been offered as an actual example, but a careful examination, the results of which were explored in the last chapter, shows that this is not the case.[13] Still, we should be aware that this is a possibility. Most of all, we do not want to give the impression that the CBGM has solved the problem of contamination once and for all. The CBGM still faces certain problematic scenarios, and the loss of witnesses plagues all methods at some point.

By saying this, we do not want to suggest that all is doom and gloom for the CBGM. Quite the contrary. The CBGM's use of genealogical coherence to detect where contamination has likely occurred may be the most significant advance on the problem to date. In the case of the Byzantine text, for example, the global stemma does seem to explain the development from the initial text to the late Byzantine tradition in spite of contamination. If some parts of our knowledge remain fuzzy, this is not the fault of the CBGM but of the tradition itself, which remains intractable at certain points.

6.2. Suggested Improvements

The previous limitations are things no method can overcome entirely. All are at the mercy of history's vagaries, for example, when it comes to the

11. For examples, see Gurry, *Critical Examination*, 151–54; Mink, "Problems of a Highly Contaminated Tradition," 49–59, 63–67.

12. In a heavily corrected manuscript such as 424, we can see a snapshot of the process of contamination (e.g., in our example in 1 Pet 4:16/24–28, where 424T attests to reading *a* and 424Z to reading *b*.

13. See Gurry, *Critical Examination*, 157–75.

evidence we have of the past. The following suggestions turn us to areas where we think the CBGM shows room for improvement.[14]

6.2.1. Weigh Agreements

One way to improve the CBGM would be to create a means of weighing different agreements differently in pregenealogical coherence. Currently, agreements are only weighed at the stage where genealogical coherence is used.[15] At that point, the connectivity of the variant is taken into consideration, as we saw in chapter 4. But at present there is no way to feed these judgments about connectivity back into the pregenealogical coherence. At least one scholar, however, has worked on this. Alberto Cantera produced a version of the CBGM for the Avestan tradition that distinguishes three levels of agreement: (1) frequent variations of single letters; (2) haplography, dittography, metathesis, and accumulations of the first type; and (3) "aberrant variants that are quite unlikely to arise independently."[16] By dividing agreements this way, Cantera is able to compare his witnesses both with and without these categories, providing a greater degree of granularity in the pregenealogical coherence. For the New Testament, of course, we are not required to follow Cantera's specific categories. In fact, the most flexible option would be to allow individual users of the CBGM to categorize agreements using their own schema.[17] It would certainly be

14. For further discussion and suggestions, see ibid., ch. 7; and Wasserman, "Criteria for Evaluating Readings," 605–7.

15. This is quite logical, since even minor variations take on genealogical significance between closely related witnesses. On the family level, even orthographic variation can be genealogically significant (although the CBGM currently does not deal with orthographica). Conversely, if two manuscripts are far apart in general, their agreement in spelling is likely coincidental. See Gordon D. Fee, "On the Types," 67–68.

16. Alberto Cantera, "Building Trees: Genealogical Relations between the Manuscripts of Wīdēwdād," in *The Transmission of the Avesta*, ed. Alberto Cantera, Iranica 20 (Wiesbaden: Harrassowitz, 2012), 329.

17. This could include an option to exclude certain singular readings from the count of agreements (pregenealogical evidence). While some think that no singulars should be excluded on principle (e.g., Gurry, *Critical Examination*, 188–92; Klaus Wachtel, "Colwell Revisited," 34–35), perhaps the best route is to make a decision on a case-by-case basis, since the singulars in P75, for example, are more likely inherited than those in, say, P45.

worth testing such a procedure on the New Testament to see what kind of results emerge, and we are happy to report that some testing along these lines is being done by David Parker at the Unversity of Birmingham (UK). We will have to await the results to see what comes of it.

6.2.2. Include Additional Data

One of the great advances of the CBGM is how much data it includes. It is hard to disagree with Mink when he says, "Looking at this abundance of data, it is obvious that text-critical work cannot simply continue as before."[18] But despite the emphasis on the abundance of data included in the CBGM, we suggest that the method could still include additional types of variants and witnesses.

First of all, it would be desirable to be able to handle witnesses that underwent systematic correction in a special way. For example, minuscule 424 is a peculiar manuscript that has been extensively corrected against another manuscript, so that 424* and 424C (or 424Z) could arguably be viewed as two distinct witnesses. Thus, in a case such as this, an option to treat the corrected text as a different witness would be desirable (although it may be problematic to count all corrections as made from another manuscript).[19] The bilingual minuscule 629 is another unusual manuscript, one in which the text of the Latin column has heavily influenced the Greek column (the influence from Latin includes the first hand). Another possible candidate is 01C2 (a corrector of Codex Sinaiticus).[20]

With regard to variants, it would be useful to be able to include certain "error" readings in the method as distinct readings rather than the current method of counting them as their "intended" reading. The reason is that such errors convey genealogical information. Sometimes, on a closer inspection, the errors may even represent meaningful (mis)readings or explain other readings created to correct them.[21] Currently, every time

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18. Gerd Mink, "Contamination, Coherence, and Coincidence," 148. Mink's comment here refers specifically to the ECM data but applies no less to the CBGM.

19. An examination of the twenty-five corrections of 424 in Jude shows that they are shared with minuscule 6 in nineteen cases, suggesting that it may be possible to identify the source texts used in corrections.

20. Klaus Wachtel confirms in personal communication that this function is on the agenda for future development of the CBGM software.

21. On this point, see Tommy Wasserman, "Theological Creativity and

the ECM identifies an error reading with its intended reading, it is doing exactly what the editors have done throughout the CBGM: connecting a variant with its source. This information should therefore be included as such in the CBGM rather than discarded by treating both error and intended reading the same. This could also be extended so that a certain variant is connected with an error as its immediate source.

Besides error readings, future versions might also provide an option to include orthographica (i.e., spelling differences). While most textual scholars agree that such differences are idiosyncratic to the scribe and thus not genealogically significant (excepting names), in cases where witnesses are closely related, such as P75 and 03 in Luke and John, even these textual minutiae seem to be genetic.[22]

In addition to adding more types of variants, we suggest that the CBGM should seek ways to incorporate all the evidence of lectionaries, versions, and patristic sources where currently cited in the ECM. The value of these last two types of evidence is that they often allow us to place readings in time and space. They also take on special significance in those places in the New Testament where text-types have played a prominent role in delineating the history of the text. For the CBGM, their inclusion means the possibility of providing fixed reference points for understanding this development in general and for studying the value (or lack thereof) of text-types as a concept. As Kurt Aland noted of the problem of the Western text in Acts, it cannot be solved without them.[23] This is acknowledged by the ECM editors in the edition of Acts, where they give special consideration to and analyze all three types of evidence, albeit with a different method.[24]

Scribal Solutions in Jude," in *Textual Variation: Theological and Social Tendencies? Papers from the Fifth Birmingham Colloquium on the Textual Criticism of the New Testament*, ed. H. A. G. Houghton and D. C. Parker, Texts and Studies Third Series 6 (Piscataway, NJ: Gorgias, 2008), 75–84; and the discussion of nonsense readings in Gurry, *Critical Examination*, 195–99.

22. See Carlo M. Martini, *Il problema della recensionalità del codice B alla luce del papiro Bodmer XIV*, AnBib 26 (Rome: Pontifical Biblical Institute, 1966), 86–122.

23. *TuT* III/1, 709. Cf. Epp's main objection to the CBGM in "Textual Clusters," 564–65.

24. See in particular Georg Gäbel's special study of the Western text in ECM III/3, 83–136, which combines a quantitative analysis and an analysis of "con-

Nevertheless, all three types of evidence could be included in the CBGM in the same way that fragmentary witnesses already are. The user could then have the option when to include or exclude them, and they probably would need to be excluded from the global stemma.[25] Especially at the level of pregenealogical analysis, there is no reason not to make the data available. Of course, the difficulties of relating versional and patristic evidence to our Greek witnesses are well known, but where these difficulties have *already* been surmounted by virtue of their citation in the ECM, this cannot be a reason to exclude them in the CBGM. Certainly, concerted study of the versions and patristic sources will ultimately move beyond the ECM and CBGM,[26] but incorporating these data in the CBGM would give us a welcome head start.

6.2.3. Make A Customizable Version

The final improvement is the most obvious and, for that reason, also the easiest to overlook. What scholars and student most need now is a version of the CBGM that allows them to edit the local stemmata and create their own database of genealogical data.[27] Currently both the CBGM for the Catholic Letters and the updated version for Acts are closed systems; their underlying data cannot be changed. Providing a customizable option would mean creating a version that allows each user to have his or her

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stellations of attestation" (Gäbel calls it "a modified Teststellen-Methode") of the Bezan trajectory in Acts, i.e., Codex Bezae, the Fleury Palimpsest, other Latin manuscripts, Codex Glazier, the Syriac Harklensis, and Irenaeus in Acts 3:2–4:18 (pp. 108–24). Gäbel concludes from this analysis that it does not "provide evidence for the existence of a single, early 'D-text,'" and he thinks it is unnecessary "to posit the existence of a main redaction to explain the test passages analyzed" (124).

25. The more fragmentary a witness, the harder it is to assess. The reason is that such witnesses are only likely to become stemmatic ancestors in a substemma where they attest to a highly connective variant.

26. As ECM IV^2/1, 23*, already warns the reader in the introduction.

27. See Wasserman, "Criteria for Evaluating Readings," 607: "A desideratum for the future is an interactive interface that will enable users to pursue the complete critical process: to create their own local stemmata of variants, build up a genealogical database, and successively evaluate the consequences of their textual choices. Perhaps we will see the emergence of multiple genealogical databases reflecting different editorial orientations."

own editable database. The computing power needed would have to be controlled so that data did not balloon and become unstable or costly. But with today's cheap storage and hosting, it seems reasonable that a system could be developed to handle the demand.

At present there is one alternate version of the CBGM of the Catholic Letters available at http://intf.uni-muenster.de/gurry/. This version differs from the official INTF version in that the initial text has been set throughout to follow the Robinson-Pierpont Byzantine text.[28] In all, this meant changing 284 local stemmata. The result is a useful point of comparison both for testing alternate methods of textual criticism on the CBGM and for thinking about how best to interpret certain results from it.[29] Nevertheless, even this version will not allow one to make changes to the local stemmata, and that is what is really needed. Fortunately, Klaus Wachtel confirms in personal communication that INTF and the Cologne Center for eHumanities (CCeH) are currently developing a version of Genealogical Queries of Acts with editable local stemmata. This is a very welcome development indeed.

Even still, any scholar or student who does not want to take over genealogical data from other users, nor desire to construct local stemmata throughout a book or corpus, but only evaluate one or few variants, is already able to use the pregenealogical data that is more objective (only a count of agreements/differences).

Finally, a future version should also allow the user to divide the text into variation units and set the variants based on one's own philological and text-critical considerations of what goes together.[30]

6.3. Conclusion

This chapter has discussed several further limitations that need to be considered when using the CBGM or evaluating the results of other scholars applying it. We have also suggested improvements for future versions. As the CBGM is applied beyond Acts and the Catholic Letters, it promises

28. Maurice A. Robinson and William G. Pierpont, *The New Testament in the Original Greek: Byzantine Textform 2005* (Southborough, MA: Chilton, 2005).

29. For reflections on this, see Gurry, *Critical Examination*, 105–7.

30. On the problem of dividing the text of Jude into variation units, see Wasserman, *Jude*, 128, 231–32, 256, 319; cf. Gäbel on the evaluation of long, expanded readings in the Western text (ECM III/3, 124–33).

to become ever more important in the construction of our most popular and important editions of the Greek New Testament. For this reason, it is crucial that serious students of the New Testament understand the method's origins, procedures, application, and results. We leave it to readers not only to see what the future holds for this promising new approach to textual criticism but also to take part in creating it.

6.4. Key Terms

- customizable version of the CBGM
- pumpkin head

Further Reading

The following is a guide to further reading. It is not an exhaustive bibliography but is meant to point to helpful literature on the CBGM.[1] We have marked the best "next steps" with an asterisk (*).

Aland, Barbara, Kurt Aland, Gerd Mink, Holger Strutwolf, and Klaus Wachtel, eds. *Novum Testamentum Graecum: Editio Critica Maior III: The Acts of the Apostles*. Stuttgart: Deutsche Bibelgesellschaft, 2017. This third volume of the ECM covers Acts. It comes in three parts (*Teilen*): (1) text (published in two books); (2) supplementary material; and (3) studies.

———. *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters*. Stuttgart: Deutsche Bibelgesellschaft, 1997–2005. This is the first edition of the fourth volume of the ECM which covers the Catholic Letters. It has now been superseded by the second edition.

———. *Novum Testamentum Graecum: Editio Critica Maior IV: Catholic Letters*. 2nd ed. Stuttgart: Deutsche Bibelgesellschaft, 2013. This is the second edition of the ECM for the Catholic Letters and the first to make consistent use of the CBGM throughout. Its text and apparatus form the basis for the text of the Catholic Letters in NA^{28} and UBS^{5}. Although it includes little detail about the CBGM, it is essential for using it. It comes in two parts (*Teilen*): (1) text; and (2) supplementary material.

Aland, Kurt. "Novi Testamenti Graeci Editio Maior Critica: Der gegenwärtige Stand der Arbeit an einer neuen großen kritischen Ausgabe des Neuen Testamentes." *NTS* 16 (1970): 163–77. This article provides important background information on the ECM.

1. For an extensive bibliography, see the one found in Gurry, *Critical Examination*.

———. *Text und Textwert der griechischen Handschriften des Neuen Testaments*. ANTF. Berlin: de Gruyter, 1987–. These volumes collate the largest number of Greek manuscripts in a selection of test passages (*Teststellen*) for each book of the New Testament. The results are used to determine the manuscripts cited by the ECM. Although they are not necessary for using the CBGM, their collations in the gospels form the basis of the Manuscript Clusters tool used in chapter 3.

Aland, Kurt and Barbara Aland. *The Text of the New Testament: An Introduction to the Critical Editions and to the Theory and Practice of Modern Textual Criticism*. Translated by Erroll F. Rhodes. 2nd ed. Grand Rapids: Eerdmans, 1989. Chapter 8 provides an English introduction to the goal, format, and use of the *Text und Textwert* volumes.

Alexanderson, Bengt. *Problems in the New Testament: Old Manuscripts and Papyri, the New Coherence-Based Genealogical Method (CBGM) and the Editio Critica Maior (ECM)*. Acta Regiae Societatis Scientiarum et Litterarum Gothoburgensis, Humaniora 48. Göteborg: Kungl. Vetenskaps- och Vitterhets-Samhället, 2014. This is the lengthiest critique of the CBGM thus far published, although it suffers from a series of misunderstandings.

Cantera, Alberto. "Building Trees: Genealogical Relations between the Manuscripts of Wīdēwdād." Pages 279–346 in *The Transmission of the Avesta*. Edited by Alberto Cantera. Iranica 20. Wiesbaden: Harrassowitz, 2012. This essay explains how the CBGM has been applied to a textual tradition beyond the New Testament. In particular, it illustrates how pregenealogical coherence can be based on weighing different agreements differently.

Carlson, Stephen C. "Comments on the Coherence-Based Genealogical Method." *TC* 20 (2015): 1–2. http://purl.org/TC/v20/TC-2015-CBGM-Carlson.pdf. This response to a 2015 SBL panel on the CBGM includes some critiques of the CBGM. To date, Carlson is the only scholar to apply computerized biological methods known as cladistics to the text of the New Testament, which gives him valuable perspective.

Epp, Eldon J. "In the Beginning Was the New Testament Text, but Which Text? A Consideration of 'Ausgangstext' and 'Initial Text.'" Pages 35–70 in *Texts and Traditions: Essays in Honour of J. Keith Elliott*. Edited by Peter Doble and Jeffrey Kloha. NTTSD 47. Leiden: Brill, 2014. This essay explores the meaning and implications of the "initial text" at some length. Epp, however, unduly complicates the matter at key points.

———. "The Multivalence of the Term 'Original Text' in New Testament Textual Criticism." *HTR* 92 (1999): 245–81. This seminal essay problematizes the term *original text*.

———. "Textual Clusters: Their Past and Future in New Testament Textual Criticism." Pages 519–77 in *The Text of the New Testament in Contemporary Research: Essays on the* Status Quaestionis. Edited by Bart D. Ehrman and Michael W. Holmes. 2nd ed. NTTSD 42. Leiden: Brill, 2013. An important essay explaining the history of text-types as a concept and defending a revised notion that Epp calls "clusters." Along the way, Epp is critical of the CBGM's use to criticize the existence of text-types, especially the Western text in Acts.

Gäbel, Georg, Annette Hüffmeier, Gerd Mink, Holger Strutwolf, and Klaus Wachtel. "The CBGM Applied to Variants from Acts: Methodological Background." *TC* 20 (2015): 1–3. http://purl.org/TC/v20/TC-2015-CBGM-background.pdf. This article provides background to the editors' use of the CBGM for editing Acts.

*Gurry, Peter J. *A Critical Examination of the Coherence-Based Genealogical Method in the New Testament*. NTTSD 55. Leiden: Brill, 2017. This is the first full-length examination of the CBGM. The method is tested for its ability to reconstruct both the initial text and the text's history. A number of examples from this book are treated at much greater length there.

———. "How Your Greek NT Is Changing: A Simple Introduction to the Coherence-Based Genealogical Method (CBGM)." *JETS* 59 (2016): 675–89. This article attempts to do just what its title suggests. An important appendix provides an index of variants discussed in relation to the CBGM, which is the closest thing we have to a textual commentary on the use of the CBGM on the text of the Catholic Letters.

Holmes, Michael W. "From 'Original Text' to 'Initial Text': The Traditional Goal of New Testament Textual Criticism in Contemporary Discussion." Pages 637–88 in *The Text of the New Testament in Contemporary Research: Essays on the* Status Quaestionis. Edited by Bart D. Ehrman and Michael W. Holmes. 2nd ed. NTTSD 42. Leiden: Brill, 2013. This essay traces the development of the goal in New Testament textual criticism. Holmes concludes by suggesting that the move to the "initial text" is a positive one in that it allows for greater collaboration between those who nevertheless differ about their ultimate goals.

———. "Working with an Open Textual Tradition: Challenges in Theory and Practice." Pages 65–78 in *The Textual History of the Greek New Tes-*

tament: Changing Views in Contemporary Research. Edited by Klaus Wachtel and Michael W. Holmes. TCS 8. Atlanta: Society of Biblical Literature, 2011. Here Holmes provides a helpful explanation of the problems faced when dealing with a contaminated or open tradition such as the New Testament.

Hüffmeier, Annette. "The CBGM Applied to Variants from Acts." *TC* 20 (2015): 1–12. http://rosetta.reltech.org/TC/v20/TC-2015-CBGM-Hüffmeier.pdf. This article offers a series of examples illustrating how the editors of the ECM for Acts use the CBGM on particular variants in Acts. Along with the textual commentary for Acts, this provides key insight into how the CBGM was applied to Acts.

Jongkind, Dirk. "On the Nature and Limitations of the Coherence Based Genealogical Method." Paper presented at the Society of Biblical Literature Annual Meeting. San Diego, 22 November 2014. This paper addresses some important limits of the CBGM especially in regard to contamination. The article has not been published but is summarized by the editors of *TC* in their special 2015 section on the CBGM. The issues are also dealt with at length in the monograph by Peter Gurry listed above.

Lin, Yii-Jan. *The Erotic Life of Manuscripts: New Testament Textual Criticism and the Biological Sciences*. Oxford: Oxford University Press, 2016. This book interacts with the CBGM primarily at the conceptual level, although not always with proper understanding. An appendix includes an interesting interview with Klaus Wachtel and Gerd Mink.

*Mink, Gerd. "The Coherence-Based Genealogical Method, CBGM: Introductory Presentation." Münster: INTF, 2009. http://www.uni-muenster.de/INTF/cbgm_presentation/download.html. Mink's first public presentation of the method to the guild of New Testament textual critics stretches to over five hundred slides! Among other things, this presentation provides his best illustration of how the global stemma is constructed.

*———. "Contamination, Coherence, and Coincidence in Textual Transmission: The Coherence-Based Genealogical Method (CBGM) as a Complement and Corrective to Existing Approaches." Pages 141–216 in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*. Edited by Klaus Wachtel and Michael W. Holmes. TCS 8. Atlanta: Society of Biblical Literature, 2011. This is the published form of Mink's "Introductory Presentation" cited above. It

is not a light read, but it is probably the best place in Mink's writing to start.

———. "Editing and Genealogical Studies: The New Testament." *Literary and Linguistic Computing* 15 (2000): 51–56. This short article detailing some of the background of Mink's method was written when the method was first being applied to the Catholic Letters.

———. "Guide to 'Genealogical Queries' (Version 2.0)." Münster: INTF, 2013. http://intf.uni-muenster.de/cbgm2/guide_en.html. A step-by-step guide to using the CBGM in the Catholic Letters.

*———. "Problems of a Highly Contaminated Tradition: The New Testament: Stemmata of Variants as a Source of a Genealogy for Witnesses." Pages 13–85 in *Studies in Stemmatology II*. Edited by Pieter van Reenen, August den Hollander, and Margot van Mulken. Philadelphia: Benjamins, 2004. Mink's most extensive published essay, this is essential reading for advanced work on the CBGM, especially as it provides the greatest detail on a number of problematic scenarios for the method.

———. "Some Notes on Dirk Jongkind's Paper 'Textual Criticism of the New Testament and the Coherence Based Genealogical Method: Some Critical Remarks.'" Paper presented at INTF colloquium. Münster, 27 January 2014. Mink's response to Jongkind's critique of the CBGM. Like Jongkind's paper, it, unfortunately, remains unpublished.

———. "Towards Computer-Assisted Textual Research." Pages 63–70 in *Bericht der Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung für die Jahre 1985 bis 1987*. Münster: Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung, 1988. A short essay, this report contains a brief description of what became the CBGM. It is the first in English from Mink.

———. "Eine umfassende Genealogie der neutestamentlichen Überlieferung." *NTS* 39 (1993): 481–99. Mink's first major article on what would become the CBGM. Several features, notably the construction of the global stemma, would change after this article was published. It is, however, important for understanding Mink's conception of textual history and how much the CBGM can tell us about it.

———. "Was verändert sich in der Textkritik durch die Beachtung genealogischer Kohärenz?" Pages 39–68 in *Recent Developments in Textual Criticism: New Testament, Other Early Christian and Jewish Literature; Papers Read at a Noster Conference in Münster, January 4–6, 2001*. Edited by Wim Weren and Dietrich-Alex Koch. Studies in Theology

and Religion 8. Assen: Van Gorcum, 2003. Here Mink details how genealogical coherence affects the practice of textual criticism. Along the way, he discusses several variants, including 1 Pet 4:16.

———. "Zur Stemmatisierung neutestamentlicher Handschriften." Pages 100–114 in *Bericht der Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung für die Jahre 1979 bis 1981*. Münster: Hermann Kunst-Stiftung zur Förderung der neutestamentlichen Textforschung, 1982. This is Mink's first ever essay on his new method. Several key concepts are already in place in this essay, such as the distinction between text and manuscript. Others, such as the global stemma, changed as he developed the method. This essay is most important for understanding the CBGM's development.

Parker, David C. "Is 'Living Text' Compatible with 'Initial Text'? Editing the Gospel of John." Pages 13–21 in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*. Edited by Klaus Wachtel and Michael W. Holmes. TCS 8. Atlanta: Society of Biblical Literature, 2011. Parker tries to reconcile his view that the gospels have no original text with the task of determining the initial text for John. He does this by arguing that the initial text is, by definition, different from the original text, a claim at odds with other ECM editors in the same volume. (See Strutwolf's essay below.)

———. *Textual Scholarship and the Making of the New Testament: The Lyell Lectures*. Oxford: Oxford University Press, 2012. This short book, originally given as lectures to textual critics working on a wide range of texts, includes a highly readable and generally accurate introduction to the CBGM.

———. "Variants and Variance." Pages 25–34 in *Texts and Traditions: Essays in Honour of J. Keith Elliott*. Edited by Peter Doble and Jeffrey Kloha. NTTSD 47. Leiden: Brill, 2014. In this essay, Parker takes a closer look at the corrections in Codex Sinaiticus to make the point that the individual manuscript had little influence on the overall shape of the textual tradition. The large degree of textual variation in spite of relatively rare textual changes in individual manuscripts can be explained by a high frequency of copying.

Spencer, Matthew, Klaus Wachtel, and Christopher J. Howe. "The Greek Vorlage of the Syra Harclensis: A Comparative Study on Method in Exploring Textual Genealogy." *TC* 7 (2002). http://purl.org/TC/v07/SWH2002/. An important study applying the CBGM to the Harklean group and comparing the results to an alternate computerized genea-

logical method. The result provides a useful point of comparison for understanding the CBGM's unique features.

Strutwolf, Holger. "Original Text and Textual History." Pages 23–41 in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*. Edited by Klaus Wachtel and Michael W. Holmes. TCS 8. Atlanta: Society of Biblical Literature, 2011. Strutwolf, the director of INTF, argues that the quest for the original text is neither quixotic nor unimportant. In this, he contrasts markedly with the conclusions of David Parker in the same volume.

———. "Scribal Practices and the Transmission of Biblical Texts: New Insights from the Coherence-Based Genealogical Method." Pages 139–60 in *Editing the Bible: Assessing the Task Past and Present*. Edited by John S. Kloppenborg and Judith H. Newman. RBS 69. Atlanta: Society of Biblical Literature, 2012. A novel application of the CBGM to the question of scribal practices. While Strutwolf's essay gives only a few examples, the method is applied systematically to James by Gurry (see above).

Strutwolf, Holger, and Klaus Wachtel, eds. *Novum Testamentum Graecum: Editio Critica Maior: Parallel Pericopes: Special Volume Regarding the Synoptic Gospels*. Stuttgart: Deutsche Bibelgesellschaft, 2011. A special volume on parallel pericopes in the Synoptic Gospels. The data from this volume constitute the basis for the Find Relatives tool explained in chapter 3.

Trovato, Paolo. *Everything You Always Wanted to Know about Lachmann's Method: A Non-standard Handbook of Genealogical Textual Criticism in the Age of Post-structuralism, Cladistics, and Copy-Text*. Rev. ed. Storie e linguaggi. Padova: Libreriauniversitaria.it, 2017. This lively work provides the best introduction to classical or Lachmannian stemmatics, a method particularly valued in Italian philology. Although he does not discuss the CBGM, Trovato discusses a number of important hesitations he has with computerized stemmatics more generally.

Wachtel, Klaus. "The Coherence Method and History." *TC* 20 (2015): 1–6. http://purl.org/TC/v20/TC-2015-CBGM-history.pdf. This brief article tries to address objections raised against the CBGM's relationship to history. Wachtel argues that the CBGM does not give us history in any simple sense but that its results can be used to understand better how the text developed across time and space.

———. "The Coherence-Based Genealogical Method: A New Way to Reconstruct the Text of the Greek New Testament." Pages 123–38 in

Editing the Bible: Assessing the Task Past and Present. Edited by John S. Kloppenborg and Judith H. Newman. RBS 69. Atlanta: Society of Biblical Literature, 2012. A brief introduction to the method that includes some helpful examples from the Catholic Letters.

———. "Colwell Revisited: Grouping New Testament Manuscripts." Pages 31–43 in *The New Testament Text in Early Christianity: Proceedings of the Lille Colloquium, July 2010*. Edited by Christian-B. Amphoux and J. Keith Elliott. Histoire du texte biblique. Lausanne: Zèbra, 2003. This essay lays out the CBGM's challenge to the notion of text-types as defined by E. C. Colwell.

———. "Conclusions." Pages 217–26 in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*. Edited by Klaus Wachtel and Michael W. Holmes. TCS 8. Atlanta: Society of Biblical Literature, 2011. A conclusion that attempts to reconcile the views of Parker and Strutwolf on the goal of New Testament textual criticism. It also includes important comments on the CBGM's relationship to thoroughgoing eclecticism and the Byzantine priority position—two alternate methods to the one used by the ECM editors.

———. "The Corrected New Testament Text of Codex Sinaiticus." Pages 97–106 in *Codex Sinaiticus: New Perspectives on the Ancient Biblical Manuscript*. Edited by Scot McKendrick, David C. Parker, Amy Myshrall, and Cillian O'Hogan. London: British Library, 2015. Wachtel's thesis about the development of the Byzantine text is here applied to the gospels using the corrections of Sinaiticus.

———. "Editing the Greek New Testament on the Threshold of the Twenty-First Century." *Literary and Linguistic Computing* 15 (2000): 43–50. A brief introduction to the process used to arrive at the data used by the CBGM.

———. "On the Relationship of the 'Western Text' and the Byzantine Tradition of Acts—A Plea Against the Text-Type Concept." ECM III/3, 137–48. This is Wachtel's most mature statement challenging the notion of text-types.

———. "Towards a Redefinition of External Criteria: The Role of Coherence in Assessing the Origin of Variants." Pages 109–27 in *Textual Variation: Theological and Social Tendencies? Papers from the Fifth Birmingham Colloquium on the Textual Criticism of the New Testament*. Edited by David C. Parker and H. A. G. Houghton. Texts and Studies Third Series 6. Piscataway, NJ: Gorgias, 2008. Another brief introduction by Wachtel that includes several helpful examples.

Wachtel, Klaus, and David C. Parker. "The Joint IGNTP/INTF Editio Critica Maior of the Gospel of John: Its Goals and Their Significance for New Testament Scholarship." Paper presented at the Annual Meeting of the Studiorum Novi Testamenti Societas. Halle, 2005. http://epapers.bham.ac.uk/754/1/2005_SNTS_WachtelParker.pdf. A statement on an important collaboration between the two major editions of the Greek New Testament.

Wasserman, Tommy. "Alexandrian Text." *Bible Odyssey*. July, 2017. https://www.bibleodyssey.org/places/related-articles/alexandrian-text. An accessible article on the concept of text-types on the Society of Biblical Literature's *Bible Odyssey* website.

*———. "The Coherence Based Genealogical Method as a Tool for Explaining Textual Changes in the Greek New Testament." *NovT* 57 (2015): 206–18. A good introduction to how the CBGM is used in practice for studying and resolving textual differences.

———. "Criteria for Evaluating Readings in New Testament Textual Criticism." Pages 579–612 in *The Text of the New Testament in Contemporary Research: Essays on the* Status Quaestionis. Edited by Bart D. Ehrman and Michael W. Holmes. 2nd ed. NTTSD 42. Leiden: Brill, 2013. In the second part of this essay on criteria for evaluating variant readings, Wasserman introduces the CBGM (examples in 1 Pet 4:16 and 1 John 5:6 are included in chapter 4 in this volume), discusses pros and cons, and suggests several new criteria based on the application of the CBGM.

———. "Historical and Philological Correlations and the CBGM as Applied to Mark 1:1." *TC* 20 (2015): 1–11. http://purl.org/TC/v20/TC-2015-CBGM-Wasserman.pdf. The result of an SBL panel, this essay provides a helpful illustration for how to use pregenealogical coherence. The example from Mark 1:1 is expanded in chapter 3 of the present volume.

———. "Was There an Alexandrian Recension of the Living Text of the Gospels?" In *Liturgy and the Living Text of the New Testament*. Edited by H. A. G. Houghton. Texts and Studies Third Series. Piscataway, NJ: Gorgias, forthcoming. The essay assesses various opposing views of the history of the New Testament text in relation to the recently revived issue of whether an early recension of the text took place in Alexandria.

Wasserman, Tommy and Peter J. Gurry. "Textual Criticism and the *Editio Critica Maior* (ECM) of James." In *Reading the Epistle of James*. Edited

by Eric F. Mason and Darian Lockett. RBS. Atlanta: SBL Press, forthcoming. An essay introducing the ECM and the CBGM to students. Several examples of variants in James are discussed.

Glossary

The terms defined here are all those listed in the Key Terms section at the end of each chapter. Cross-referenced terms are marked with an asterisk (*).

attestation: The term *attestation* refers to a group of witnesses that attest a particular variant. By definition, every variation unit is made up of at least two attestations. Within the CBGM for the Catholic Letters, it is possible to study coherence in a single attestation or in all the attestations within a variation unit. When the coherence is imperfect for an attestation, that may suggest *multiple emergence of the variant.

Byzantine text: The majority of extant Greek New Testament manuscripts dating from the period after the ninth century reflect a uniform and carefully controlled text known as the Byzantine text (labeled "Syrian text" by Westcott and Hort and "Koine text" by Hermann von Soden) that was distributed widely through the Byzantine Empire. The standardized text form that eventually developed is the result of a long process and not a fourth-century recension, as argued famously by Westcott and Hort.

coherence: The foundation for the CBGM, coherence is synonymous with *agreement* or *similarity* between texts. Within the CBGM the two most important types are *pregenealogical coherence and *genealogical coherence. The former is defined merely by agreements and disagreements ($a = b$; $a \neq b$); the latter also includes the editors' textual decisions in the disagreements ($a \rightarrow b$; $a \leftarrow b$).

coincidental agreement: Any agreement between two (or more) witnesses that was not copied from one to the other. This happens when scribes produce the same reading independently of each other either because the reading is easy to produce (e.g., the addition of *ἀμήν* at the end

of an epistle) or because of *contamination. These readings are sometimes referred to as accidental agreements. Such agreements are not genealogically significant and, unless they all independently go back to the initial text, are simultaneously cases of *multiple emergence.

collation: A comparison of the text between two or more witnesses noting the differences between them. The level of detail recorded depends on the collator. Some collations record everything down to spelling and accenting differences, but most are much more selective. For the whole New Testament, the **Text und Textwert* volumes are the most extensive collations in terms of the number of manuscripts collated.

colophon: A note, typically at the end of a manuscript, providing details about the context in which it was made. From the colophons for Thomas of Harkel's seventh-century Syriac translation of the New Testament, we learn that his work was a revision of an earlier translation, as well as where he finished it, when, and how many Greek manuscripts he used to do it.

common error method: *See* Karl Lachmann.

connectivity: This is a measure for how strongly a variant is thought to connect witnesses genealogically. Both the philological nature of the variant itself and the genealogical coherence help determine the relative connectivity of a variant. Within *textual flow diagrams, the connectivity setting tells the computer how much latitude it has in connecting witnesses. A connectivity of ten is considered average, connecting witnesses with one of their ten closest potential ancestors that share the same reading. A connectivity of one would connect each witness with its closest potential ancestor. On the other end of the spectrum, an absolute connectivity connects witnesses with *any* potential ancestor with the same reading. In this way, lower connectivity implies more textual changes, higher connectivity implies fewer.

contamination: Whenever a witness has derived text from multiple ancestors, the result is contamination. The causes vary from a scribe copying directly from multiple exemplars to scribes copying from a manuscript that has been corrected against another manuscript. The problem this creates for genealogy is that agreement no longer promises to reveal *shared* ancestry. The CBGM tries to address this using the *genealogical coher-

ence of witnesses to identify possible cases of contamination and their source(s).

customizable version of the CBGM: A customizable version of the CBGM would allow anyone to create his or her own *local stemmata. The results would be instructive for seeing how different decisions affect the results of the CBGM.

ECM: The *Editio Critica Maior*, or *Major Critical Edition*, was conceived by Kurt Aland as a replacement to Constantin von Tischendorf's well-known *Editio octava critica maior* (8th ed.). The aim of the ECM is to present extensive data from the first one thousand years of transmission, including Greek manuscripts, versions, and patristics. Currently, editions for Acts and the Catholic Letters have been published, with more volumes in various stages of completion.

genealogical coherence: At any point of comparison, two *witnesses agree ($a = b$), disagree directionally ($a \rightarrow b$; $a \leftarrow b$), or have an uncertain relationship (a –?– b). Genealogical coherence describes the combination of these relationships between witnesses and is applied at a specific point of variation by means of *textual flow diagrams. It is based on both *pregenealogical coherence and the data of the editors' own textual decisions in the *local stemmata.

global stemma: *See* stemma.

harmonization: When scribes change one text to agree with another, similar text, the result is harmonization. This can happen across books such as the Synoptic Gospels or 2 Peter and Jude, or it can happen within the same book when scribes are influenced by what they have already copied. This is sometimes referred to as assimilation.

hypearchetype: In traditional genealogical methods, a hypearchetype is a reconstructed ancestor that sits below (*hype*-) the terminal ancestor (or archetype) of the stemma. The CBGM dispenses with reconstructed hypearchetypes in favor of allowing witnesses to have more than one ancestor in the global stemma. The only hypothetical witness in the CBGM is the *initial text, or *A*.

initial text: This is the ECM editors' own reconstructed text that, taken as a whole, represents the hypothetical *witness from which all the extant witnesses derive. This hypothetical witness is designated *A* in the CBGM, from the German *Ausgangstext*, which could also be translated as "source text" or "starting text." The relationship of the initial text to the author's original text needs to be decided for each corpus and by each editor; it cannot be assumed.

INTF: The Institut für Neutestamentliche Textforschung, or Institute for New Testament Textual Research, was founded by Kurt Aland in 1959. Today the institute is the hub for new Testament textual criticism and has oversight of the ECM. It has also helped produce the NA^{28} and the UBS^{5}, although a new committee was formed in 2011 to prepare future editions of both the NA and UBS editions. Gerd Mink developed the CBGM at INTF during the 1980s.

Karl Lachmann: A German philologist (1793–1851) well known for his textual criticism, especially the so-called common error method, which is often named after him. This method attempts to set an editor's textual choices on more objective grounds by relating the extant manuscripts to each other. The basic principle is that when witnesses agree in noncoincidental mistakes (or errors), they must share a common ancestor. The method faces significant problems in contaminated traditions, however, and has only worked in isolated cases for the New Testament.

Lachmannian method: *See* Karl Lachmann.

local stemma: *See* stemma.

Majority Text (MT): A technical term used in the *ECM to refer to the text found in the majority of Greek manuscripts whether or not they agree with the *initial text. Thus defined, it is purely a quantitative term and should be distinguished from the so-called Byzantine text, which refers to a stage in the history of the text. See ECM IV^{2}/1, 22*.

manuscript cluster: A group of manuscripts whose texts are more closely related to each other than they are to the *Majority Text, as measured either in selected test passages or at all points of variation. The Manuscript Clusters software discussed in chapter 3 is used to find closely related Greek

manuscripts in order to study coherence. For each manuscript, the tool shows the level of agreement with the Majority Text and all manuscripts with a higher level of agreement (cf. *textual cluster).

multiple emergence: When scribes independently created the same reading in the process of transmission, the reading is said to have emerged multiple times. This may be indicated in the CBGM by poor *genealogical coherence. A reading that emerged multiple times may not be a good candidate for the more difficult reading (**lectio difficilior*) and thus not the *initial text. All cases of multiple emergence are simultaneously cases of *coincidental agreement.

optimal substemma: A *substemma is said to be optimal when all a descendant's variants can be explained by either agreement with or derivation from the ancestors in the substemma. Where multiple optimal substemma are possible, the editor must decide which is the best (i.e., most parsimonious) among them.

potential ancestor: Within the CBGM, a witness is a potential ancestor of another *witness if it has a higher portion of prior readings. Some witnesses may have dozens of potential ancestors, but most will not be necessary for the *optimal substemmata and thus the *global stemma. When a potential ancestor is considered necessary, it is known as a *stemmatic ancestor.

pregenealogical coherence: The number of shared readings between any two texts constitutes their pregenealogical coherence. This is expressed as a percentage of the number of places where the two *witnesses are comparable. Witness 01 and witness 81 agree in 2,553 of the 2,987 places where they can be compared in the Catholic Letters. Their pregenealogical coherence is therefore 85.5 percent. To put this in perspective, the average pregenealogical coherence of all pairs of witnesses in the Catholic Letters is 87.6 percent; the highest is 99.1 percent; the lowest is 77.9 percent.

pumpkin head: In the spirit of A. E. Housman, this would be a textual critic who does not use his or her brains when using the CBGM (see §6.1 above).

***stemma codicum*:** A Latin term meaning "stemma of manuscripts," this is the product of traditional or Lachmannian stemmatics. Such a stemma

differs from the CBGM's *global stemma in that it connects manuscripts, not just their texts.

stemma (local, sub-, and global): A stemma is simply a set of relationships either of manuscripts, texts, or their variants. The CBGM operates with three types that show the relationship of readings (local stemma), the relationship of a single witness to its *stemmatic ancestors (substemma), and the relationships of all witnesses to each other (global stemma).

stemmatic ancestor: *See* potential ancestor.

text-type: *See* *textual cluster.

***Text und Textwert* (*TuT*):** The *Text und Textwert* (or *Text and Textual Worth*) volumes constitute the largest ever collation of New Testament manuscripts. The most important function of the *TuT* volumes relative to the ECM is that they are used to determine the best selection of Greek manuscripts to represent the whole tradition.

textual cluster: A term coined by Eldon Epp to replace the former notion of text-types, whose quantitative definition is no longer viable in light the increased data used in the CBGM. As Epp defines it, a textual cluster is a group of manuscripts whose texts are more closely related to each other than they are to the texts of other manuscripts or clusters. The important differences are that a cluster is defined qualitatively (not just quantitatively) and that versional evidence (not just Greek) is included. Some have found the term to be a useful descriptor of an observable phenomenon. Not all, however, have adopted the new term, nor do all agree that the definition is really an advancement on the old one.

textual flow: Textual flow describes the direction of change between any two *witnesses in those places where they disagree. If witness 81 has a reading prior to witness 01, the text is said to "flow" at this point from 81 to 01. Due to *contamination, any two witnesses will have text flowing in both directions.

textual flow diagram: These diagrams are the CBGM's way of applying *genealogical coherence to specific points of variation. Where the genealogical coherence in an *attestation is strong, the diagram will connect

each witness with its most similar potential ancestor by way of agreement. Where such is not the case, ancestors will have to be found that do not share the same reading. The result is weaker *coherence, which may, in turn, suggest that the reading emerged multiple times and is therefore secondary.

variant address: In the ECM, every variation unit is assigned its own unique reference. These are used to study the coherence at variant passages. Unlike traditional Bible references, these addresses narrow to the level of word and even variant reading. The very first variant in the book of Acts, for example, can be referenced as Acts 1:1/24*a*. This refers to the twenty-fourth word in the main line of the edition, which is the article before Ἰησοῦς attested by all but 03 and 05. The words of the initial text are numbered with even numbers and the spaces between them with odd numbers. This word numbering starts over for each verse.

witness: Within the CBGM, a witness is the totality of a manuscript's readings and thus the text as distinguished from the manuscript itself. The traditional Gregory-Aland numbers are still used, however, so that the text of Codex Sinaiticus is referred to as 01. The distinction between text and manuscript is fundamental to the CBGM because texts can relate in ways that our extant manuscripts cannot. An old text, for example, may be found in a much younger manuscript.

Appendix
The Layout of the ECM

This appendix introduces the layout of the *Editio Critica Maior*, which you will need to understand to make full use of the CBGM.

The layout of the ECM can be intimidating when you first encounter it, but the more you use it, the more you will see its remarkable clarity and efficiency. In time, it becomes quite easy to use. We can illustrate the layout with the sample from Jas 2:1 provided in figure A.1.

Each page is divided into two sections. The top half is devoted to the editorial text and a list of the main variants from it. Each word in the editorial text is accompanied by an even number. These are used to reference variants in the main apparatus found in the second half of the page. Here is where we go to find much greater detail for each variant reading. What immediately stands out is the sheer size of the apparatus in comparison to the text. Whereas the NA[28] lists only a single variation with three different readings for Jas 2:1, the ECM gives four different variations with a total of thirteen readings.

Each verse starts with bold numbers for chapter and verse (**2, 1**). New to the ECM are further numbers referencing each word and the spaces between them. These numbers start over for each verse with even numbers used for the words in the main line and odd numbers for the spaces between. (Numbering the spaces makes it easier to reference variants that occur between words in the main text such as additions.) Along with this numbering, each variant reading is assigned a letter of the alphabet. In this way, the ECM allows for precise reference, not only to verses, but also to variation units and even to specific variant readings within them. For example, the first variation unit in Jas 2:1 can be referenced with "Jas 2:1/2–4." If we want to refer to the first variant reading ("my brothers"

Jak 1,27-2,2 25

ἄσπιλον ἑαυτὸν τηρεῖν ἀπὸ τοῦ κόσμου. **2,1** ἀδελφοί μου, μὴ ἐν προσωπολημψίαις
40 42 44 46 48 50 2 4 6 8 10

40-50 b x x x x x x
46 b εκ
48 b x
40-44 b ασπιλον αυτον τηρειν
c ασπιλον τηρειν εαυτον
d και ασπιλον εαυτον τηρειν
e ασπιλον σεαυτον τηρειν
f ασπιλους εαυτους τηρειν
g ασπιλους εαυτους τηρειτε
h υπερασπιζειν αυτους
2-4 b αδελφοι (Λ)
c αγαπητοι (Λ)
d om.
10 b προσωποληψια

ἔχετε τὴν πίστιν τοῦ κυρίου ἡμῶν Ἰησοῦ Χριστοῦ τῆς δόξης. **2,2** ἐὰν γὰρ εἰσέλθῃ
12 14 16 18 20 22 24 26 28 30 2 4 6

12 b εχητε
18-30 b της δοξης του κυριου ημων ιησου χριστου
c του κυριου ημων ιησου χριστου
d του χριστου
e ιησου χριστου
7 b τις

Jak 2,1

2-4 a αδελφοι μου P74. 01. 02. 03. 04. 025. 044. 5. 33. 69. 81. 88. 206. 218. 322. 323. 398. 400. 429. 436. 522. 614. 621. 623. 629. 630. 631. 808. 915. 918. 945. 996. 1067. 1127. 1175. 1241. 1243. 1270. 1292. 1297. 1359. 1409. 1448. 1490. 1505. 1524. 1563. 1598. 1609. 1611. 1661. 1678. 1718. 1735. 1739. 1799. 1831. 1842. 1852. 1890. 2138. 2147. 2200. 2298. 2344. 2412. 2464. 2492. 2495. 2523. 2541. 2652. 2805. **Byz**. PsOec. **L:**FV. **S:**H

b αδελφοι (Λ) 1251. 1751. 2243. L427. L590. L593. L596. L884. L921. L938. L1141. L1281. L1441. L2087. Antioch. Cyr

c αγαπητοι (Λ) L422

d om. L623

↔ a/b 2374. **K:**SB. **S:**P

– P20. P23. P54. 048. 0166. 0173. 0246. 1066. 1846. L60. L156. L170. L1126. L1442

10 a προσωπολημψιαις 01. 02. 03*. 04. 1175. Antioch. Cyr. PsOec. **S:**H

ao προσωποληψιαις 03C2. 025. 044. 5. 33. 69. 81. 88. 206. 218. 322. 323. 398. 400f2. 429. 436. 522. 614. 621. 623. 629. 630. 631. 808. 915. 918. 945. 996. 1067. 1127. 1241. 1243. 1270. 1292. 1297. 1359. 1409. 1448. 1490. 1505. 1524. 1563. 1598. 1609. 1611. 1661. 1678. 1718. 1735. 1739. 1751f3. 1799. 1831. 1842. 1852. 1890. 2138. 2147. 2200. 2298. 2344. 2374. 2412. 2464. 2492. 2495. 2523. 2541. 2652. 2805. **Byz** [459(*f1). 2243(*f2). L2087f4]

b προσωποληψια 442. L884. **K:**SBA^{V}. **A**^{mss}

↔ a/ao/b P74

↔ a/b **L:**FV. **S:**P

↔ ao/b 2423

– P20. P23. P54. 048. 0166. 0173. 0246. 1066. 1846. L60. L156. L170. L1126. L1442

12 a εχετε … 38f. Antioch. Cyr. PsOec

b εχητε 61. 94. 459. 642. 808. 996. 1127. 1661

↔ a/b **L:**FV. **K:**SB. **S:**PH

– P20. P23. P54. 048. 0166. 0173. 0246. 1066. 1846. L60. L156. L170. L1126. L1442

18-30 a του κυριου ημων ιησου χριστου της δοξης 01. 02. 03. 04. 025. 044. 5. 69. 81. 88. 218. 322. 323. 398. 400. 621. 623. 629. 808. 915. 918. 945. 996. 1127. 1175. 1241. 1243f. 1270. 1297. 1359. 1524. 1563. 1598. 1609. 1661. 1678. 1718. 1735. 1739. 1751. 1842. 1852. 2298. 2374. 2464. 2492. 2523. 2805. **Byz**. Cyr. PsOec. **L:**FV

b της δοξης του κυριου ημων ιησου χριστου 206. 429. 436. 522. 614. 630. 1067. 1292. 1367. 1409. 1448. 1490. 1505. 1611. 1799. 1831. 1890. 2080. 2138. 2147. 2200. 2412. 2495. 2541. 2652. **K:**S^{mss}B. **S:**PH

c του κυριου ημων ιησου χριστου 33. 631. Antioch

d του χριστου 2344

e ιησου χριστου **K:**S^{ms}

? **K:**S^{ms}

↔ a/b **Ä**

– P20. P23. P54. P74. 048. 0166. 0173. 0246. 1066. 1846. L60. L156. L170. L1126. L1442

Jak 2,2

2 a εαν …

ao αν 442

7 a om. … Antioch. PsOec. **L:**FV. **S:**PH

b τις 398. Cyr. **G:**B

↔ a/b **K:**SBA

– P20. P23. P54. P74. 048. 0166. 0173. 0246. 1066. 1846. L60. L156. L170. L1126. L1442

Fig. A.1. A sample from the ECM IV^{2} showing Jas 2:1

= ἀδελφοί μου), we can do so using "Jas 2:1/2–4*a*." At the bottom of the page we see this variant listed under "2–4," which is, in turn, listed under the bold heading "Jak 2,1." English readers will note that this is one place where the edition is not bilingual, instead using the German abbreviations for book names.[1]

The initial text (or *Ausgangstext*) is always the first reading and hence designated *a*. At Jas 2:1/2–4, there are four readings: (*a*) "my brothers" (ἀδελφοί μου), (*b*) "brothers" (ἀδελφοί), (*c*) "beloved" (ἀγαπητοί), and (*d*) an omission. When a reading is considered a merely orthographic difference, an *o* is added (e.g., reading *ao* at Jas 2:1/10). Likewise, an *f*, following the German for "error" (*Fehler*), is used for an error or nonsense reading. The *f* either accompanies the variant letter itself or, more often, is appended to the manuscript number itself (e.g., 38f in Jas 2:1/12*a*), depending on whether the editors could identify the reading they thought was intended by the scribe. When more than one error occurs, they are numbered consecutively to distinguish them. All errors are listed in full in the supplementary volume (see ECM IV^2/2, §2.4). Following these variant letter addresses, we find two more notations. The first is a bidirectional arrow (↔) followed by a/b to indicate that the editors could not decide whether the witnesses cited have reading *a* or reading *b*. Lastly, a dash (–) marks witnesses with lacunae or some other defect at this point. Occasionally the ECM will overlap variation units. When this is done, the reader is pointed to the overlapping unit with an up or down arrow (↑ ↓), depending on where it is located in the apparatus.

For each variant reading, the evidence is cited in the order of Greek manuscripts (in the order of papyri, majuscules, minuscules, and lectionaries) followed in turn by church fathers and the versions. Each witness is separated by a period; note that the majuscules are always cited by their Gregory-Aland numbers rather than their alphabetic designations (thus 03, not B). However, the supplementary volume does offer both (ECM IV^2/2, §2.1). The abbreviation Byz is used to represent a group of manuscripts that preserve the Byzantine text.[2] These manuscripts are listed in the supplementary volume for each book along with the places where

1. Likewise, German often uses commas where English uses periods and vice versa.

2. The new siglum Byz to represent the Byzantine text will successively replace the 𝔐 (Majority Text) in future editions of Nestle-Aland; the change has been implemented in the Catholic Letters of the NA^{28}.

they differ from the initial text. The versions are listed with a bold letter to designate the versional language (e.g., **S** = Syriac), often followed by a colon that distinguishes the version's particular translations (e.g., **S:**PH = the Syriac Peshitta and Harklean Syriac). Readers will note that these designations follow the German rather than English so that K is for Coptic (*Koptisch*) and Ä for Ethiopic (*Äthiopisch*).

When the editors cannot decide on the initial text, the main line is split, as seen for Acts 1:6/10 in figure A.2. In this case, they were torn between *ἠρώτον* and *ἐπηρώτων*. One reading is still assigned as the *a* reading, but now the alternative reading is marked by a diamond (◆) in both the top apparatus and the main apparatus. This diamond is now used in the same way in the NA/UBS editions.

The special ECM volume on parallel pericopes referenced in chapter 3 shares the same basic layout and structure as the other volumes (see fig. A.3). The main difference is in the upper half of the page, which is more condensed to allow space for the parallel pericopes. We should also note that this volume does not include any evidence from versions or patristic citations and does not offer a newly constructed initial text; it simply follows the NA^{27}/UBS^{4}. Despite this, it remains an important (though neglected) resource for studying the influence of harmonization in the selected pericopes.

1,5-6 5

1,5 ὅτι Ἰωάννης μὲν ἐβάπτισεν ὕδατι, ὑμεῖς δὲ ἐν πνεύματι βαπτισθήσεσθε ἁγίῳ

2 4 6 8 10 12 14 16 18 20 22

9 b εν *16-22 b* βαπτισθησεσθε εν πνευματι αγιω
c εν πνευματι αγιω βαπτισθησεσθε

23 b (ο και μελλετε λαμβανειν)

οὐ μετὰ πολλὰς ταύτας ἡμέρας. **1,6** οἱ μὲν οὖν συνελθόντες | ἠρώτων / ἐπηρώτων | αὐτὸν λέγοντες·

24 26 28 30 32 2 4 6 8 10 12 14

33 b εως της πεντηκοστης *6 b* x *8 b* ελθοντες *12-14 b* x x

10 ♦ b επηρωτων
c επηρωτησαν

— P74. 049. 319. 321. 323. 1827S. 2570. L587. L1188

1,5

4 a ιωαννης ...
ao ιωανης 03. 05
9 a om. ... 398C. Chrys. Cyr. Dam. Did. Hyp. SevGab
b εν 398*. 522. 2147. 2805
— P74. 319. 321. 323. 1827S. 2570. L587. L1188
16-22 a εν πνευματι βαπτισθησεσθε αγιω 01*. 03. 81. 1642
b βαπτισθησεσθε εν πνευματι αγιω P74V. 01C2. 02. 04. 08. 044. 5. 33. 61f1. 88. 94. 180. 181. 307. 323S. 429. 431. 436. 453. 467. 522. 610V. 614. 619. 621. 629. 630. 636. 915. 945. 996. 1162. 1175. 1270. 1292. 1297. 1409. 1490. 1501. 1505. 1595. 1611. 1678. 1704. 1751. 1831S. 1838. 1842. 1875V. 1884. 1891. 2138. 2147. 2200. 2298. 2344. 2412. 2495. 2652. 2718. 2805. 2818. L60L1f1. L60L2. L156S. L1825. L2010. **Byz** [206Sf2. 1127f3. L1178L1. L1178L2f1]. AnastS. Ath. Bas. Chrys. Cyr. CyrH. Dam. Did. DionAr. Hyp. Or. OrLat. Phot. SevGab. **L:**V. 50. 54/2. 58. 189>
c εν πνευματι αγιω βαπτισθησεσθε 05. Did. **L:**5. 51. 54*^{V}. 56. 70. 72. 73. **S:**A
— P56. P74. 319. 321. 323. 610. 1827S. 1875. 2570. L587. L1188
23 a om. ... 05C1. Chrys. CyrH. Dam. Did. Or. OrLat. Phot. SevGab. **L:**V. 50. 54. 58. **K:**SBM. **S:**APH. **Ä**. **A**. **G**. **Sl**
b quem et accepturi estis 05*f. **L:**AU. HIL. 5. 51. 56. 70. 72. 73. 189>
— P56. 319. 321. 323. 1827S. 2570. L587. L1188
26 a μετα ... 6f
30 a ταυτας ... 1831Sf
33 a om. ... 05C1. Chrys. CyrH. Dam. Did. Or. OrLat. Phot. SevGab. **L:**V. 50. 51. 54. 56. 58. 70. 72. 73. 189. **S:**APH. **Ä**. **A**. **G**. **Sl**
b εως της πεντηκοστης 05*. **L:**5. **K:**S>M>
? **K:**B>
— P56. P74. 319. 321. 323. 1827S. 2570. L587. L1188

1,6

6 a ουν ... 1609f. AstS. Bas. Chrys. SevGab
b om. 61
— P56. P74. 69. 319. 321. 323. 1827S. 1875. 2570. L587. L1188
8 a συνελθοντες ... 01C2. 1838f. AstS. Bas. Chrys. OrLat. SevGab. **L:**V. 5. 50. 51. 54. 56. 58. 70. 72. 189. **K:**SBM. **Ä**
b ελθοντες 01*
? **K:**S$^{ms>}$
↔ a/b 1875
— P56. P74. 319. 321. 323. 1827S. 2570. L587. L1188
10 a ηρωτων 01. 02. 03. 88. 180. 915. 1175. 1409. 2774
ao ηρωτουν 04*
♦ b επηρωτων 05. 08. 044. 5. 33. 61. 81. 94. 307. 323S. 429. 431. 436. 453. 467. 522. 610. 614. 619. 621. 629. 630. 636. 945. 996. 1162. 1270. 1292. 1297. 1490. 1501. 1505. 1595. 1611. 1642. 1678. 1704. 1751. 1831S. 1838. 1842. 1884. 1891. 2138. 2147. 2200. 2298. 2344. 2495. 2652. 2718. 2805. 2818. L60L1. L156S. L1825. L2010. **Byz**. AstS^{mss}. Bas. Chrys. Hipp. SevGab
bo επηρωτουν 04C3f. 181. L60L2
c επηρωτησαν 886
↔ b/bo/c 1875. 2412
— P56. P74. 319. 321. 323. 1827S. 2570. L587. L1188
12-14 a αυτον λεγοντες ... AstS^{mss}. Bas. Chrys. Hipp. OrLat. SevGab
b om. 180
— P56. P74. 319. 321. 323. 1827S. 2570. L587. L1188

Fig. A.2. A page from the ECM III showing Acts 1:5–6

Baptismus Jesu [18] Mt 3,13-17 – Mk 1,9-11 – Lk 3,21-22 – Jh 1,29-34 1

Mt 3	Mk 1	Lk 3
13 Τότε παραγίνεται ὁ Ἰησοῦς [10]ἀπὸ τῆς Γαλιλαίας ἐπὶ τὸν [20]Ἰορδάνην πρὸς τὸν Ἰωάννην τοῦ [30]βαπτισθῆναι ὑπ᾽ αὐτοῦ. **14** ὁ δὲ Ἰωάννης	**9** Καὶ ἐγένετο ἐν ἐκείναις [10]ταῖς ἡμέραις ἦλθεν Ἰησοῦς ἀπὸ [20]Ναζαρὲτ τῆς Γαλιλαίας	**21** Ἐγένετο δὲ ἐν τῷ [10]βαπτισθῆναι ἅπαντα τὸν λαὸν

13/6
a ο … 2680f
b om. 372
– 02. 09. 011. 013. 022. 033. 034. 038. 041. 043. 69. 79. 176. 222. 807. 829. 1342. 1343. 1344. 1348. 1451. 1500. 1593. 1780. 2542

13/16-26
a επι τον ιορδανην προς τον ιωαννην 01. 04V. 05S. 019. 032. 037. 042. 0211. 0233. 1. 13. 28. 33. 118S1. 124. 157. 346. 372. 517. 543. 565. 579. 700. 713. 788. 826. 827. 892. 954. 983. 1071. 1093. 1241. 1273. 1424. 1446. 1457. 1582. 1661. 1675. 2193. 2411. 2680. 2737. 2766. **Byz** [1421V]
a o επι τον ιορδανην προς τον ιωανην 03. 021. 1335V
b επι τον ιωαννην προς τον ιορδαννην 740
c επι τον ιορδανην προς ιωαννην 979
d εις τον ιορδανην προς τον ιωαννην 1009. 1253V
e επι τον ιορδανην 205. 863. 1823
↔ *a/ao* 4S. 16. 31. 131. 191. 209. 273. 732. 735. 791. 792. 828. 851. 1279. 1331. 1336. 1338. 1506. 1528. 1602. 1604. 2546. 2786
– 02. 04. 09. 011. 013. 022. 033. 034. 038. 041. 043. 69. 79. 176. 222. 807. 829. 1342. 1343. 1344. 1348. 1421. 1451. 1500. 1593. 2542

13/28-14/6 ↓
a του βαπτισθηναι υπ αυτου ο δε ιωαννης …
b om. 579
– 02. 09. 011. 013. 022. 033. 034. 038. 041. 043. 33. 69. 79. 176. 222. 807. 829. 1342. 1343. 1344. 1348. 1451. 1500. 1593. 2542

13/32 ↑
a υπ …
b απ 61
↑ 579
– 02. 09. 011. 013. 022. 033. 034. 038. 041. 043. 69. 79. 176. 222. 807. 829. 1342. 1343. 1344. 1348. 1451. 1500. 1593. 2542

14/6 ↑
a ιωαννης 01Z1. 04. 05S. 019. 032. 037. 042. 0211. 0233. 1. 13. 28. 33. 118S1. 124. 157. 346. 372. 517. 543. 565. 700. 713. 740. 788. 826. 827. 828. 863. 892. 954. 983. 1009. 1071. 1093. 1241. 1273. 1279. 1424. 1446. 1457. 1582. 1661. 1675. 2193. 2411. 2680. 2737. **Byz**
a o ιωανης 1335
b om. 01T. 03
↔ *a/ao* 4S. 16. 31. 191. 205. 209. 273. 732. 735. 791. 792. 851. 1253. 1331. 1336. 1338. 1506. 1528. 1555. 1602. 1604. 1780. 2372. 2766. 2786
↑ 579
– 02. 09. 011. 013. 022. 033. 034. 038. 041. 043. 69. 79. 176. 222. 807. 829. 1342. 1343. 1344. 1348. 1451. 1500. 1593. 2542

9/2-12 ↓
a και εγενετο εν εκειναις ταις ημεραις … 1451Z
b om. 1451T
– 04. 011. 022. 033. 044. 0233. 807. 1338. 1421

9/2-4 ↑
a και εγενετο … 1451Z
b εγενετο 03
c εγενετο δε 032. 1661
d και 038
↑ 1451T
– 04. 011. 022. 033. 044. 0233. 807. 1338. 1421

9/8-12 ↑
a εκειναις ταις ημεραις … 019f. 1451Z. 2411T
b ταις ημεραις εκειναις 05. 037. 042. 79. 174. 713. 892. 979. 1071. 1241. 1593. 1661. 2766
c f εκειναις εν ταις ημεραις 2411Z
↑ 1451T
– 04. 011. 022. 033. 044. 0233. 807. 1338. 1421

9/14-16
a ηλθεν ιησους 01. 02. 03. 07. 09. 013. 017. 019. 024. 028. 030. 031. 034. 041. 045. 047. 1. 3. 4. 16. 22. 31. 33. 61. 118. 131. 174. 176. 205. 209. 273. 372. 555. 700. 740. 829. 851. 954Sf. 968. 1012. 1279. 1296. 1328. 1329. 1333. 1335. 1340. 1341. 1342. 1343. 1346. 1347. 1500. 1528. 1555. 1579. 1582T. 1602. 1675. 1780. 2193. 2372. 2411. 2680. 2737. 2766T
b ηλθεν ο ιησους 05. 021. 036. 037. 038. 042. 043. 0211. 13. 18. 28. 35. 69. 79. 124. 130. 150. 157. 184. 191. 222. 233. 346. 348. 427. 543. 565. 579. 713. 732. 752. 788. 791. 792. 826. 827. 828f. 863. 979. 983. 1009. 1071. 1093. 1110. 1230. 1241. 1253. 1273. 1326. 1330. 1331. 1334. 1336. 1337. 1339. 1344. 1345. 1348. 1424. 1446. 1451. 1457. 1502. 1506. 1574. 1582Z. 1593. 1604. 1661. 1692. 1823. 2542. 2546. 2726. 2766Z. 2786
c και ηλθεν ιησους 032
d ελθειν τον ιησουν 892
↔ *a/b* 517
– 04. 011. 022. 033. 044. 0233. 517. 807. 1338. 1421

9/18-20
a απο ναζαρετ …
a o1 απο ναζαρεθ 05. 07. 09f. 013. 017. 021. 028. 030. 031. 032. 034. 038. 041. 045. 047. 1. 4. 13. 61. 69. 124. 174. 176. 184. 222. 273. 346. 348. 543. 555. 788. 826. 828. 829. 1071. 1273. 1279. 1333. 1343. 1346. 1347. 1424. 1500. 1555. 1780. 2411. 2680
a o2 απο ναζαρατ 02. 024
b ο απο ναζαρετ 792

21/2-4
a εγενετο δε … P75V
b εγενετο 13. 69. 788. 826. 828. 983
c και εγενετο 176
– P75

21/6-10
a εν τω βαπτισθηναι … 038f1. 2766f2
b μετα το βαπτισθηναι 28. 222
– P75

21/12
a απαντα … 0211f1. 233C. 1335(Tf1). 2766f2
b παντα 01. 032. 233*. 427. 732. 1241. 1279. 2542. 2680
c om. 131. 1009
↔ *a/b* P75
– P75

… Mk 1,9/18-20
↔ *a/ao1* 131
↔ *a/ao1/ao2* 579
– 04. 011. 022. 033. 044. 0233. 807. 1338. 1421

9/22-24
a της γαλιλαιας … 1348f
b εις την γαλιλαιαν 827. 863. 1446. 1457. 1593. 1604. 1823. 2546
– 04. 011. 022. 033. 044. 0233. 807. 1338. 1421

Fig. A.3. The first page of the ECM parallel pericopes volume